Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

14-AMRP-0126

MAR 17 2014

Ms. J. A. Hedges, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton
Richland, Washington 99354

Dear Ms. Hedges:

AGREED ORDER AND STIPULATED PENALTY NUMBER DE 10156, DOCUMENTATION OF IMPLEMENTATION OF ACTIONS REQUIRED BY SECTION 4.6.2

This letter transmits documentation regarding implementation of Agreed Order and Stipulated Penalty Number DE 10156 (Agreed Order), Section 4.6.2. Attached are the training materials provided to the personnel required to conduct designation sampling and the training rosters with attendees' job positions and names.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

This action was completed in accordance with the schedule and requirements for reduction of penalty per Agreed Order, Section 4.6.2. If you have any questions, please contact us or Doug Shoop, RL Deputy Manager, on (509) 376-7395.

Doug S. Shoop for

Matt McCormick, Manager
U.S. Department of Energy
Richland Operations Office

John C. Fulton, President and
Chief Executive Officer
CH2M HILL Plateau Remediation Company

Attachment

cc: See Page 2

cc w/attach:
Administrative Record
Ecology NWP Library
Environmental Portal
HF Operating Record (J. K. Perry, MSA, H7-28)

cc w/o attach:
D. B. Bartus, EPA
L. T. Blackford, CHPRC
G. Bohnee, NPT
J. L. Boller, EPA
R. Buck, Wanapum
A. E. Cawrse, CHPRC
S. L. Dahl-Crumpler, Ecology
L. M. Dittmer, CHPRC
B. J. Dixon, CHPRC
D. A. Faulk, EPA
S. Harris, CTUIR
S. Hudson, HAB
M. N. Jaraysi, CHPRC
R. Jim, YN
R. A. Kaldor, MSA
K. Niles, ODOE
R. E. Piippo, MSA
J. B. Price, Ecology
A. L. Prignano, Ecology
A. J. Ramirez, CHPRC
D. Rowland, YN
J. R. Seaver, CHPRC
D. G. Singleton, Ecology
E. R. Skinnarland, Ecology

Agreed Order and Stipulated Penalty No. DE 10156

Section 4.6.2

USDOE and CHPRC personnel, who conduct designation sampling, will be trained on performing sampling procedures as required by the test method and SWOC Unit Group Waste Analysis Plan; and USDOE will deliver to Ecology the training material provided to the personnel required to conduct designation sampling (e.g., training notes, agendas and written training materials) and the training roster(s) (which include the training attendees' job positions and names.)

Completion Package Contents:

1. SWOC Waste Analysis Plans Required Reading
2. CHPRC Course Completion Roster, SWOC Waste Analysis Plans for Sampling Personnel Required Reading
3. SWOC Sampling Personnel Training Records
4. Course #301805, Sampling Fundamentals – Training Materials

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SWOC Waste Analysis Plans Required Reading

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One Team. One Culture.

SWOC Waste Analysis Plans
Required Reading

Training Material Approval:

The signatures below indicate that this training material is approved for use in training sampling personnel on the SWOC Waste Analysis Plans.

Training Manager:

Shayne Eyre	Signature	2/24/14 Date

Environmental Manager

Stephanie Johansen	Signature	02/24/14 Date

SWOC Director

Darren Boone	Signature	2-25-14 Date

SGRP Remediation Support Director

Mark Cherry	Signature	2-24-14 Date

CH2MHILL
Plateau Remediation Company
One Team. One Culture.

Required Reading as required by the Ecology Agreed Order with SWOC

DOE and Ecology have entered into an "Agreed Order" affecting Dangerous Waste Management Units (DWMUs) within SWOC (except LLBG). Section 4.6.2 of the Order requires, in part, the following: USDOE and CHPRC personnel, who conduct designation sampling, will be trained on performing sampling procedures as required by the test method and SWOC Unit Group Waste Analysis Plan.

This required reading covers the portions applicable to sampling personnel from the Solid Waste Operations Complex (SWOC) Waste Analysis Plans (WAP)for the Dangerous Waste Management Units (DWMU) covered by the Agreed Order. Specifically, the WAPs for the following DWMU's:

- T-Plant
- Central Waste Complex (CWC)
- Waste Receiving and Processing (WRAP)

The attached are specifically from HNF-1886, Revision 8, *Central Waste Complex Waste Analysis Plan*. Similar wording is found in the WAP's for T-Plant and WRAP, so will not be repeated here.

Read the following selections and verify completion.

- Table of Contents – be familiar with the overall content of the WAP
- Section 2.1.2.5 – Sampling for Confirmation Screening
- Section 2.6 – Sampling and Analysis Plans
- Section 4 – Selecting Sampling Processes
- Section 7.4 – Sampling and Analytical Methods
- Section 8 - Recordkeeping

CENTRAL WASTE COMPLEX WASTE ANALYSIS PLAN

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- Sulfide
- Cyanide
- Paint filter.

Refer to Section 2.1.2.6.2, Chemical Screening Quality Control for QC information. Processes will be maintained by the CWC that defines the basis for selecting screening tests.

2.1.2.4.1 Chemical Screening Frequency

At a minimum, 10 percent [round up to the nearest whole number of container(s)] of the mixed or dangerous waste containers verified by physical screening (Section 2.1.2.3) must be screened chemically (Ecology 1997).

Small containers of waste (labpacks), not otherwise identified in the exceptions and packaged in accordance with WAC 173-303-161 will be screened chemically in accordance with the chemical screening frequency of the waste stream as determined by the PES team (Section 1.1.1.2.2.). Inner containers will be segregated by physical appearance. At least one container from each group (or three containers if all are similar) will be screened chemically.

2.1.2.4.2 Chemical Screening Exceptions

Chemical screening will not be required for the following:

- Small containers of waste in over-packed containers (labpacks) packaged in accordance with WAC 173 303-161 and not prohibited under LDR specified in WAC 173-303-140.
- Waste exempted from the physical screening requirements (Section 2.1.2.3.3.).
- Commercial chemical products in the original product container(s) (e.g., off-specification, outdated, or unused products).
- Chemical containing equipment removed from service, (e.g., ballasts, batteries).
- Waste containing asbestos.
- Waste, environmental media, and/or debris from the cleanup of spills or release of single substance or commercial product or otherwise known material (e.g., material for which an MSDS can be provided).
- Confirmed noninfectious waste (e.g., xylene, acetone, ethyl alcohol, isopropyl alcohol) generated from laboratory tissue preparation, slide staining, or fixing processes.
- Hazardous debris as defined in WAC 173-303-040.
- Other special cases could be exempted on a case-by-case basis with Ecology approval.

The aforementioned wastes will be exempted from chemical screening and will be documented in accordance with Section 8, Recordkeeping.

2.1.2.5 Sampling for Confirmation Screening

Sampling will be performed in accordance with WAC 173-303-110(2) to ensure that the samples are representative of the waste being sampled. A representative sample will be obtained for chemical screening. The chemical screening methods do not require any sample preservation methods because the screening tests will be performed at the time and location of sampling, or as soon as possible thereafter. During the interim period, the samples will be stored in a manner that maintains chain of custody and protects the sample composition.

2.1.2.6 Quality Assurance and Quality Control for Confirmation Process

The following QA and quality control (QC) elements will be used by the CWC operating organization to ensure that the confirmation activities generate the data essential to providing an indication that waste received will be as described in the pre-shipping documentation. Data quality objectives have been container at a CWC, WRAP, or T Plant, or shipping the container off-site to a permitted TSD facility.

- Based upon the evaluation of information (hazards identified) the container will be managed in a safe configuration.
- The container will be tracked for discrepancy resolution.

2.6 Sampling and Analysis Plans

A sampling and analysis plan (SAP) can be developed outside the WAP to support the characterization of waste for various projects. A SAP provides sufficient detail to ensure that sampling personnel and the analytical laboratory correctly implement the DQOs and quality assurance project plan requirements pursuant to TPA action plan, Section 6.5. SAPs can utilize existing knowledge, historical information, and/or additional analytical data in combination with sampling requirements as identified in the SAP to sufficiently characterize a waste stream for acceptance into CWC.

4 SELECTING SAMPLING PROCESSES

Specific sampling procedures and techniques depend on both the nature of the material and the type of packaging. Waste samples will be handled and preserved as necessary to protect the sample. For treatment, preservation techniques, and holding times, CWC personnel or authorized delegate will utilize the procedures and techniques recommended in SW-846. This section describes the sampling methodology used to obtain representative samples. DQOs have been established in accordance with TPA Action Plan Section 6.5.

4.1 Sampling Strategies

Table 3 contains waste forms and sample equipment used to sample the referenced waste. Sampling of these waste forms will be performed in accordance with Table 3.

4.2 Sampling Methods

Sampling methods are those described in WAC 173-303-110(2) and incorporated by reference into this WAP.

The basic sampling sequence includes the following:

- Obtain a unique sample number and complete the sample tag before sampling.
- Obtain a pre-cleaned sampler and sample bottles.
- Attach sample label to sample bottles.
- For sampling liquid waste, use a sampler or pipet to sample for two phase liquids. Homogeneous liquids in small containers will be poured into a sample bottle.
- For sampling solid waste, use a scoop, trier, or hand auger to obtain a sample of the waste. For large containers of waste, composite several augers or scoops to ensure samples are representative.
- Fill sample containers in the following sequence: volatile organics, pH (corrosivity), ignitability, semivolatile organics, metals,
- For solid waste, wipe the exterior surfaces of the sample bottles with a dry rag.
- Attach sample labels to outer plastic bags.
- Place samples in an appropriate receptacle for transfer to the laboratory.
- Complete the chain-of-custody records and comply with chain-of-custody procedures.
- Seal and mark the receptacle in accordance with WAC 173-303-071(3)(1).
- Transfer receptacle to the analytical laboratory, as appropriate to meet sample holding times.
- Properly clean and decontaminate non-disposable sampling equipment or package for return to central sampling equipment decontamination area according to onsite requirements.

4.3 Selecting Sampling Equipment

Sampling equipment selection is detailed in Table 3. Sampling equipment needed to sample waste will be maintained and decontaminated as necessary to ensure representative samples according to SW-846.

Table 3 CWC Sampling Equipment

Waste form	SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Test Methods, Section 9., References	
	Waste type	Equipment*
Liquids	Free-flowing liquids and slurries	COLIWASA, glass thief, pipet; dip, tank, bomb, and bailer samplers; and tube-type samplers
Solidified liquids	Sludges	Trier, scoops and shovels; tube-type samplers and augers; for small containers, a spoon may be used in place of a scoop
Sludges	Sludges	Trier, scoops and shovels; tube-type samplers and augers; for small containers, a spoon may be used in place of a scoop
Soils	Sand or packed powders and granules	Auger, scoops and shovels; tube-type samplers and augers; for small containers, a spoon may be used in place of a scoop
Absorbents	Large-grained solids	Large trier, scoops and shovels
Wet absorbents	Moist powders or granules	Trier, scoops and shovels
Process solids and salts	Moist powders or granules	Trier, scoops and shovels
	Dry powders or granules	Thief, scoops and shovels
	Sand or packed powders and granules	Auger, scoops and shovels
	Large-grained solids	Large trier, scoops and shovels
Ion exchange resins	Moist powders or granules	Trier, scoops and shovels
	Dry powders or granules	Thief, scoops and shovels
	Sand or packed powders and granules	Auger, scoops and shovels
COLIWASA = composite liquid waste sampler. * other ASTM-approved equipment could be used to collect samples.		

4.4 Sample Preservation

Because samples are normally transported from the field to an analytical laboratory, some preservation is sometimes necessary to maintain the integrity of the samples. Samples shall be preserved in a manner consistent with regulatory requirements.

4.5 Establishing Quality Assurance and Quality Control for Sampling

This WAP incorporates the requirements of TPA Action Plan Section 6.5, for QA/QC. Sample collectors prepare a permanent log of sampling activities in accordance with SW-846. Records will be maintained in accordance with Section 8, Recordkeeping. Log entries include: date of collection, time of collection, location, batch number, sample number, tank number (if applicable), copy of the chain-of-custody form, sampling methodology, container description, waste matrix (liquid), description of generating process (e.g., decontamination activities), number and volume of samples, field observations, field measurements (e.g., pH, percent lower explosive limit), laboratory destination and laboratory number, and signature.

These log entries will be made by trained personnel while the sampling is performed. The logs or copies of logs will be maintained in accordance with Section 8, Recordkeeping.

Chain-of-custody records accompany samples at all times. The CWC operating organization will maintain and follow written hard copy or electronic chain-of-custody processes to ensure accountability of waste sample handling and to guarantee sample integrity. All samples will be labeled with a unique identifier.

The following QA/QC elements will be used by CWC to ensure sampling activities for designation purposes result in acceptable laboratory data:

- Representative sampling methods as defined by WAC 173-303-110(2); and/or SW-846.
- Approved sample containers and sampling equipment per SW-846.
- Samples numbered.
- Traceable labeling system.
- Field QA/QC samples (per applicable SAP).
- Documentation of equipment calibration per equipment manufacturer specifications.
- Chain-of-custody records and corresponding chain-of-custody processes.

7.3 Provisions for Compliance with Federal and State Land Disposal Restriction Requirements

LDR requirements restrict the land disposal of certain types of waste subject to the *Hazardous Waste Management Act of 1976*. Waste managed on the Hanford Facility falls within the purview of these LDRs per 40 CFR 268, incorporated by reference by WAC 173-303-140. Wastes that are otherwise prohibited from land disposal may be land disposed if the treatment standards established by WAC 173-303-140 are satisfied.

Generators determine what LDR treatment standards apply to the mixed and/or dangerous wastes, and make an evaluation of whether or not these treatment requirements have been satisfied. For wastes subject to concentration-based treatment standards, compliance with LDR treatment standards will be evaluated through analysis of a representative grab sample of the waste. For those LDR constituents subject to treatment for the listed and characteristic waste numbers that apply to the waste, including any UHC identified by 40 CFR 268.2(i), if the Knowledge of the generator is not sufficient to make complete constituent determinations. If the waste does not meet the applicable treatment standards, the generator provides waste information with each shipment stating so, in accordance with WAC 173-303-380(1)(j),-(k),-(l),-(m),-(n), or -(o). If the waste meets the LDR standards, the generator must send a certification that the waste meets the treatment standards.

7.4 Sampling and Analytical Methods

It is recognized that ALARA concerns may warrant modifications to the methods to ensure appropriate protection of personnel health and safety without impact to the method or sample integrity. Waste analyzed using SW-846 methods modified to address ALARA protection concerns will be considered acceptable provided the applicable data quality objectives specified in the modified SW-846 methods will be met.

Samples of waste will be transferred from CWC to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples are collected in accordance with SW-846 and as described in Section 4. Sample storage will be provided for waste containers while awaiting laboratory analysis results.

7.5 Waste Treatment

Waste must be treated to meet LDR as specified in WAC 173-303-140, except as provided if Permittees are in compliance with the requirements and schedules of TPA Action Plan Appendix D, Milestone M-91 series, incorporated by reference herein, with respect to mixed transuranic waste that has been designated by the Secretary of Energy for disposal at the Waste Isolation Pilot Plant (WIPP) pursuant to the *WIPP Land Withdrawal Act*, Pub. L. 102-579, as amended. Provided such compliance is maintained, such Secretary-designated mixed transuranic waste may be certified and shipped to WIPP in lieu of LDR treatment if, as of the time of shipment, such waste is exempt from LDR treatment standards when disposed of at WIPP.

Mixed waste is treated to the applicable standards required by the disposal facility or other applicable requirements. The CWC can perform limited treatment on waste before shipment to an on-site TSD unit or offsite TSD facility that could perform full treatment of the specific waste to meet LDR treatment requirements. Waste requiring treatment other than what the CWC can provide is repackaged, labeled, and transferred to a TSD unit for storage pending identification or development of an appropriate treatment method. Prior to treatment of waste, the CWC will have in place processes to ensure safe waste treatment as defined in Section 1.1.1.2 of this WAP. When characteristics of the waste are changed as a result of treatment or other processing, documentation will be entered into the unit-specific operating record.

When evaluating the treatability of certain characteristic waste, consideration must be given to any additional UHCs that exist above universal treatment standards in 40 CFR 268.48. When the concentration-based standards are used, the constituent concentrations for the waste must fall below those specified in 40 CFR 268.40 and/or 268.48 for UHCs and in WAC 173-303-140 for land disposal without

8 RECORDKEEPING

Recordkeeping requirements applicable to the Hanford Facility Operating Record, CWC unit-specific portion are described as follows:

a. Confirmation records described in Section 2.
b. Waste information documentation described in Section 2.
c. Waste sampling records and associated documentation described in Sections 3 and 4.
d. Laboratory records and associated documentation described in Section 5.
e. Documentation regarding waste re-evaluation frequencies described in Section 6.
f. Special waste analysis requirement documentation described in Section 7.

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CHPRC Course Completion Roster

SWOC Waste Analysis Plans for Sampling Personnel Required Reading

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CHPRC COURSE COMPLETION ROSTER

Records Use Only

Course No.	Course Title	Date Completed
N/A	SWOC Waste Analysis Plans for Sampling Personnel Required Reading	3/3/14

Session No.	Location	Beginning Date/Time
Records Use Only	N/A	N/A

NOTE: IN ORDER TO OBTAIN CREDIT FOR CLASS, FILL OUT FORM ACCURATELY:
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3. **IF YOU DO NOT HAVE A HID OR PAYROLL NUMBER, CONTACT YOUR INSTRUCTOR TO COMPLETE A TRAINING COMPLETION RECORD, FORM A-6001-539.**

Billing Info
☐ BILLABLE CLASS
☒ NON-BILLABLE CLASS

	Hanford ID (HID) or Person ID	Print Name Company (Last, First, MI)	Signature	Company	DWTP Job Title/Position
1.	0090448	Briggs, Barbara E	Bo Briggs	CHPRC	Nuclear Chemical Operators
2.	0058219	Fulton, John C	[signature]	CHPRC	Nuclear Chemical Operators
3.	0026815	Hall, Frank M	[signature]	CHPRC	Nuclear Chemical Operators
4.	0017276	Patterson, Kevin C	[signature]	CHPRC	Nuclear Chemical Operators
5.	0041852	Wall, Lesly D	L.D. Wall	CHPRC	Nuclear Chemical Operators
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Instructors Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Fallon Holloway [signature]	3-3-14 T3-28	Fallon Holloway [signature]	3-3-14 T3-28

COMMENTS:

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*BILLING CODES: (CB) Complete Bill, (CN) Complete No-Bill, (FB) Fail Bill, (IB) Incomplete Bill, (IN) Incomplete No-Bill, (NB) No Show Bill, (XX) Cancel. IF BLANK, WILL DEFAULT TO COMPLETE BILL (CB).
DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60

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SWOC Sampling Personnel Training Records

Note: Applicable training rosters for sampling personnel are included; however, details regarding other attendees at those courses have been redacted

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The following Sampling NCOs are qualified Multi-Media samplers:

Barbara Briggs (H0090448)

John C. Fulton (H0058219)

Frank Hall (H0026815)

Kevin Paterson (H0017276)

Lesly Wall (H0041852)

The Sampling NCOs listed above have completed the following required courses:

301805 – Sampling Fundamentals

301806 – Sampling OJT

301810 – Multi-Media Sampling Qualification

Supporting training records are included.

Note: Rosters contained in this section do not include job postings because the rosters preceded the Agreed Order.

The information contained in this report is from the Mission Support Alliance Training Records office [redacted] If you have questions or need clarification on the information below, please contact the Training Records office by calling either 509-376-8671 or 509-372-2407.

2/21/2014 [redacted] 1

Name: Briggs, Barbara E
HID: 0090448

Course#:	Course Title	LM_ENRLMT_DESCR	LM_ACT_CD	Completion
301805	S&GRP SAMPLING FUNDAMENTALS CLASSROOM	TRI_REFERENCE_HNF =	301805:0009	01/26/2010
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0034	12/28/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0035	01/06/2010
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10008	12/08/2011
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10031	11/12/2013
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0038	09/13/2010
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10007	08/21/2012

[redacted]

3

CHPRC COURSE COMPLETION ROSTER

Course No.	Course Title	Date Completed	Records Use Only
301805	Sampling Fundamentals	1/26/2010	MAR - 8 2010
Session No. Records Use Only 0009	Location 2101 m	Beginning Date/Time	

Billing Info
☐ BILLABLE CLASS
☐ NON-BILLABLE CLASS

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	Hanford ID (HID) or Person ID	Print Name (Last, First, MI)	Signature	Company	CACN (Charge Code)	Billing Code *See Billing Codes Below
1	[redacted]					
2						
3						
4						
5	H0090448	Briggs, Barbara E	BE Briggs	CHPRC		
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Instructor's Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Bob Carr / [signature]		Tim Bender / Tim Bender	1/26/10

COMMENTS:

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DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60 [redacted]

A-6005-129 (REV 0)

(3)

TRAINING COMPLETION RECORD
Form A

OJT

Records Use Only

RECEIVED
NOV 13 2013
10031

STUDENT

HID/Person ID	Last Name	First Name	MI
H0090448	Briggs	Barbara	E

TRAINING

Course No.	Date Completed	CACN	Company
301806	11/12/13		CHPRC

Course Title Sampling Fundamentals

TRAINING STATUS CODE:
(If blank, default is Complete)

- (●) Complete
- ( ) Fail
- ( ) Incomplete

Test Number N/A

Checklist Number

Score(s)

COMMENTS:

OJE ATTACHED

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

BE Briggs — 11.11.13
(Employee Signature) (Date)

~~TIM C BENDER~~ Jim LaPointe 11/12/13 — R3-~~19~~ 23 11/12/13
(Authenticator Print Name) (Authenticator Signature) (Date) (MSIN)

BB 11/6/13

Chris Fulton — 11/11/13
(Instructor Print Name) (Instructor Signature) (Date) (MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6001-539 (REV 1)

0031

Our Team. Our Culture.

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide
S&GRP Sampling Fundamentals

Course #301806
Revision 3, 8/9/2012

The signatures below represent review and approval of the following training materials:

- Student Manual
- OJT Guide
- OJE

Prepared By:	**Jim LaPointe**	*Signature on file*	*8/9/2012*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	**Barbara Briggs**	*Signature on file*	*8/9/2012*
S&GRP Union NCO Rep.	Print	Signature	Date:
Approved By:	**Nathan Bowles**	*Signature on file*	*8/9/2012*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	**Scott Conley**	*Signature on file*	*8/9/2012*
S&GRP Senior Technical Lead	Print	*Signature*	Date:
Approved By:	**David Capelle**	*Signature on file*	*8/9/2012*
S&GRP Operations Manager	Print	*Signature*	Date:

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Barbara Briggs	H0090448	11/4/2013			
Place a checkmark for Initial Certification or Re-Certification			●	⊙	1 of 15

Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

BarbaraBriggs	Be Briggs	11.11.13
Trainee Print	Trainee Signature	Date

Change Record

Rev 0. This is the initial issue of this training and certification package. This training and certification package is based upon 301811 - NCO Routines Sampling Task List Rev. 0 dated 01/19/2009. This package will be updated as any changes or modifications are made to the qualification for Routines Sampling activities.

Change made to incorporate new Field Logging and Electronic Data Gathering (FLEDG) system. Date 5-18-2009

Added the following to S.F. Cert on 6/4/2009 to REV.2

- Add new chemical to the preservation dispenser
- Added new Rugged Reader/LT700 water level transducer
- Clarified preservation with pipette and dispenser
- Fill out RULS
- Obtain HPW with C.S. NCO permission
- Added P.O.# to RULS instruction
- Added a task for filling out COC for other organizations

10/14/09 – Rev 2a; Updated procedure reference throughout.

05/16/11 – Rev 2b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/Material Condition
2. Safety Responsibilities
3. Safeguards & Security Policy
4. ALARA Administration Control Levels
5. Procedure Compliance Expectations
6. Self-Checking Principles
7. Safety Communication

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

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OJE Tasks and Requirements

Conditions
- Given the necessary tools, equipment and procedures.

Standards
- Without Operator injury.
- According to the steps of the applicable procedures.

References

GRP-FS-04-G-014, Measurement of Groundwater Levels
GRP-FS-04-G-015, Bottle Preservation
GRP-FS-04-G-025: Millipore Water System
Site Specific Health and Safety Plan (HASP) Rev. 3
GRP Off-Road Driving

Knowledge Evaluation Questions:

Q1.	Does it make a difference whether a plastic or glass container is used to collect samples?	Eval. Initials	Date
[redacted]	The type of sample container used is of the utmost importance to maintaining the integrity of the sample. Sample containers typically are made of plastic or glass, but one material may be preferred over another for a specific analysis.	JCF	11/11/13

Q2.	Describe how sample bottles and containers are verified / certified clean.	Eval. Initials	Date
A)	*The containers must have a LOT number (aka PROD. #), which matches the LOT number on the green QA sticker, (which matches the LOT number on the Certificate of Analysis COA).*	JCF	11/11/13

Q3.	Where is the P.O. number recorded for tracking purposes?	Eval. Initials	Date
A)	*RULS*	JCF	11/11/13

Q4.	Where is the P.O. number found to record the information necessary for tracking?	Eval. Initials	Date
A)	*On the QA acceptance sticker.*	JCF	11/11/13

Q5.	What are the two primary methods used to preserve samples?	Eval. Initials	Date
A)	*Chemical additives (pH Control) and cooling (including freezing)*	JCF	11/11/13

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Q6.	What is the purpose of the Reagent Usage Log sheet?	Eval. Initials	Date
	Provides the ability to link laboratory sample results - to the reagents used in the preservation process. When reagents are used in the pre-preservation process – verify brand name, lot number, purchase order# chemical name, concentration, and date preservatives are introduced into the process, is recorded on the Regent Usage Log Sheet.	JF	11/11/13

Q7.	Where are the LOT#s for the new chemical located?	Eval. Initials	Date
A)	*On the chemical container label.*	JF	11/11/13

Q8.	Where do you document the LOT#s for the preservation chemical added to the sampling process?	Eval. Initials	Date
A)	*On the dispenser lid (**<u>this is done without procedure steps and the label is not recognized in any documentation. We still want the knowledge expressed</u>**) and on the RULS*	JF	11/11/13

Q9.	Describe how preserved sample bottles are controlled to prevent tampering.	Eval. Initials	Date
	Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles. Normally, this is accomplished by locking the bottles in a secure location or in a sample vehicle which is locked when not attended.	JF	11/11/13

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		Eval. Initials	Date
Q10.	Explain the purpose of the Preservative Volume Table (Attachment 2, GRP-FS-04-G-015, Bottle Preservation).		
A)	*The Preservative Volume Table directs the appropriate volume of preservative – for a given volume of sample container so Lab criterion is met and the DOT regulations are complied with.*	JCF	11/11/13

		Eval. Initials	Date
Q11.	Using the Preservative Volume Table, what volume of Sulfuric Acid (H_2SO_4) preservative is required for a 250mL container?		
A)	.125mL.	JCF	11/11/13

		Eval. Initials	Date
Q12.	Using the Preservative Volume Table, what volume of preservative of Sodium Thiosulphate ($Na_2S_2O_3$) is required for a 500mL container?		
A)	*0.5mL.*	JCF	11/11/13

		Eval. Initials	Date
Q13.	Explain the proper storage location and applicable storage processes for preservation chemicals.		
A)	*All chemicals shall be stored in the proper chemical storage unit. Unopened acids and bases shall be stored in their original containers, inside compatible chemical storage cabinets.*	JCF	11/11/13

		Eval. Initials	Date
Q14.	Explain the difference in "trace metals" Nitric Acid and Ultrex Nitric Acid.		
A)	*The Ultrex (when manufactured) utilizes high purity water, thus eliminates the impurities of trace metals.*	JCF	11/11/13

		Eval. Initials	Date
Q15.	Is it acceptable to substitute "trace metals" Nitric Acid with Ultrex Nitric Acid?		
A)	*Yes.*	JCF	11/11/13

		Eval. Initials	Date
Q16.	Is it acceptable to substitute Ultrex Nitric Acid with "trace metals" nitric acid?		
A)	*No*	JCF	11/11/13

		Eval. Initials	Date
Q17.	For the hood in the sample preparation area, state how flow in the hood is verified(There is two things).		
A)	*Check the airflow by observing the monitor, or in the absence of a monitor use a "kimwipe" taped to the open sash. The vent hood is tested monthly for hood flow by vent and balance personnel.*	JCF	11/11/13

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Q18.	Explain why flow is required in the chemical preservation hood.	Eval. Initials	Date
A)	*All work involving hazardous chemicals should be performed inside a ventilation hood to protect the individual from the hazard.*	~~11/11~~ JCF JF 11/11/13	11/11/13

Q19.	Who is notified first in the event of a spill **(Health or Environment Consequences)**?	Eval. Initials	Date
A)	*911(Land Line) 373-0911 (Cell Phone)0 – Hanford Fire Department.*	JCF	11/11/13

Q20.	Who is contacted when the waste containers are full?	Eval. Initials	Date
[redacted]	*If the Satellite Accumulation Area (SAA) is full, contact your supervisor to get the SAA waste area properly prepared for further use. Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity.*	JCF	11/11/13

Q21.	*When is a SAA area container considered full?*	Eval. Initials	Date
[redacted]	*Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity. This is recommended to be no higher than the start of the shoulder of the container in order to allow room to add other chemicals for neutralization of the waste (if needed). Waste containers shall not be filled above the neckline or greater than 90% volume.*	JCF	11/11/13

Q22.	What is the acceptable Meg ohm-cm value, for the HPW that is used for the cleaning process?	Eval. Initials	Date
A)	*The MYRON Conductivity meter in room 109 must read >15 Megohm-cms when filling the reservoirs with high purity water.*	JCF	11/11/13

Q23.	What is the proper response, if the Milli-Q/Biocel System does not read 18.2 Mega Ohms-cm?	Eval. Initials	Date
A)	*Do not use the ultra high purity water (UHPW) and notify the operations manager or FWS.*	JCF	11/11/13

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Q24.	Explain how the reference point is identified on a well.	Eval. Initials	Date
[redacted]	*This point is generally marked by an "X," usually on the north side of the casing. When the RP cannot be readily identified because a stamped "X" is not present, assume the RP is the top of the outer casing on the north side. The information is normally provided with associated paperwork.*	JF	11/11/13

Q25.	Explain how the measuring point is identified or determined by the operator.	Eval. Initials	Date
A)	*The measuring point is usually identified on the associated paperwork. However, if not then the operator taking the measurement identifies where the measurement was taken.*	JF	11/11/13

Q26.	How is the vertical offset between the RP and MP determined?	Eval. Initials	Date
A)	*It is the measured difference in height between where the RP and MP are located.*	JF	11/11/13

Q27.	What is the power supply for the e-tape?	Eval. Initials	Date
A)	*9 volt battery*	JF	11/11/13

Q28.	How does the operator determine when the sensing probe has contacted water within the well?	Eval. Initials	Date
A)	*An audible alarm will be emitted by the e-tape.*	JF	11/11/13

Q29.	How do you know the battery and audible alarm are functioning?	Eval. Initials	Date
A)	*Pressing the test switch will provide an audible alarm if the battery and alarm are working.*	JF	11/11/13

Q30.	Does the test switch verify that the probe is working properly?	Eval. Initials	Date
A)	*No.*	JF	11/11/13

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Barbara Briggs	H0090448	11/4/2013	○	◉	9 of 15

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		Eval. Initials	Date
Q31.	How is the sensitivity of the probe set?		
A)	*The sensitivity of the probe can be adjusted using the sensitivity knob. It also acts as the ON-OFF switch.*	JF	11/11/13
Q32.	Explain how the standardization of the e-tape is verified to be current.		
A)	*A standardization sticker is placed on each instrument. In order to use the e-tape the standardization must be current.*	JF	11/11/13
Q33.	Why is it important to avoid excessive speed while lowering the e-tape slowly into a well?		
[redacted]	*Lower the e-tape slowly to prevent "bird caging", cutting, and/or damaging the e-tape. It is also important to lower the E-tape slowly to minimize how much e-tape gets contaminated by the well contents and if the water is shallow enough the sensing probe may become fouled by mud or sediment within the well which may cause the sensing probe to emit a continuous sound or no sound at all.*	JF	11/11/13
Q34.	When removing the e-tape from the well it must be decontaminated. How much of the e-tape is required to be decontaminated?		
A)	*Three (3) feet beyond that which contacted the well water.*	JF	11/11/13
Q35.	When lowering the e-tape into a well, what protective equipment should be worn and why?		
A)	*Leather gloves should be worn to prevent possible burn/blistering of the hands while trying to control the e-tape speed.*	JF	11/11/13
Q36.	How is the sensing probe verified to be operational prior to using it?		
A)	*Turn the e-tape "ON" and place the probe in a cup of plain water. The alarm should sound if everything is functioning properly.*	JF	11/11/13
Q37.	If the battery is dead and must be replaced, what is done with the dead battery?		
A)	*Place it in the battery accumulation area for future disposal.*	JF	11/11/13

Q38.	How accurate must the operator attempt to read the actual depth-to-water when taking measurements?	Eval. Initials	Date
A)	*Within 1 mm.*	JF	11/11/13

Q39.	When taking the two readings for the water level measurements what must the accuracy be between the two readings?	Eval. Initials	Date
[redacted]	*According to the procedure take two consistent measurements that agree within 6 mm to assure accuracy of measurement (The 6mm is the standard from the EPA for an accuracy of two consecutive readings from the well).*	JF	11/11/13

Q40.	What measuring device is used when measuring an artesian well water level?	Eval. Initials	Date
A)	*A data device with a transducer (The Rugged Reader with the LT500).*	JF	11/11/13

Q41.	Name two ways of recording well data use at S&GRP?	Eval. Initials	Date
A)	*FLEDG and Water level measurement form.*	JF	11/11/13

Q42.	What is the minimum equipment that must be carried when driving off road?	Eval. Initials	Date
A)	*In all cases of off-road travel, a hand shovel, fire extinguisher, and communications (cell phone or radio) must always be provided in the vehicle.*	JF	11/11/13

Q43.	Who provides written instructions for off road driving yearly?	Eval. Initials	Date
A)	*Each year the Hanford Fire Department provides specific written guidance for off-road driving.*	JF	11/11/13

Candidate Name:	Barbara Briggs	HID#:	H0090448	Date Issued:	11/4/2013	Initial Cert.	Re-Cert.	Page #
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Skills Check

NOTE: The candidate may use a performance level applicable for the job or situation, which may be Perform, Simulate and/or Discuss. Exempt/manager OJT candidates may only Simulate or Discuss these tasks.

Task #	Task Description	Training Method	Eval. Initials	Date
TSK 1	Use the AJHA to identify any hazards and limits associated with the bottle preservation activities.	P / S / D	JJF	11/11/13
TSK 2	Fill out a Reagent Usage Logsheet.	P / S / D		
TSK 3	Pre-preserve sample bottles using the following: ☐ Metered/pump dispenser ☐ Large manual pipette ☐ Small manual pipette Auto pipette	P / S / D		
TSK 4	Fill out COC to deliver bottles to other organizations.	P / S / D		
STD	Reference: GRP-FS-04-G-015			
TSK 5	Identify the waste containers which are to be used for each type of preservation waste.	P / S / D		
TSK 6	Prepare preserved sample bottles for other organizations.	P / S / D		
TSK 7	Obtain HPW from the cleaning station. **NOTE:** Do not obtain HPW without certified cleaning station operators concurrence.	P / S / D		
TSK 8	Acquire the appropriate Ultra High Purity Water (UHPW) necessary to accomplish sampling tasks.	P / S / D	JJF	11/11/13

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Barbara Briggs	H0090448	11/4/2013	●	●	12 of 15

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Task #	Task Description	Training Method	Eval. Initials	Date
TSK 9	Perform a Water Level Measurement Using an E-tape.	P / S / D	JF	11/11/13
TSK 10	Perform a Water Level Measurement Using the Rugged Reader with the LT500	P / S / D	JF	
TSK 11	Complete all sections of Groundwater Water Level Measurement Form(s) in the applicable procedure.	P / S / D	JF	
TSK 12	Input well data using (FLEDG) Field Logging and Electronic Data Gathering.	P / S / D	JF	11/11/13

Candidate Name:	Barbara Briggs	HID#:	H0090448	Date Issued:	11/4/2013	Initial Cert.	Re-Cert.	Page #
Place a checkmark for Initial Certification or Re-Certification						●	●	13 of 15

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COMMENTS

Record any comments you have related to this OJE Card (i.e. details including specific questions asked, inadequate answers, termination of OJE, etc.). Refer to the task or requirement number when making your comments.

Candidate Name:	Barbara Briggs	HID#:	H0090448	Date Issued:	11/4/2013	Initial Cert.	Re-Cert.	Page #
			Place a checkmark for Initial Certification or Re-Certification			●	⊙	14 of 15

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S&GRP Sampling Fundamentals Certification OJE Guide | CH2MHILL Plateau Remediation Company | Course #301806, Revision 3 8/9/12

Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named below against the standards outlined in this OJT/E document. Based on the evaluation,

I RECOMMEND Barb Briggs for CERTIFICATION.

Print Name

Chris Fulton	[signature]	11/11/13
Evaluator Print	Evaluator Signature	Date

Field Work Supervisor (FWS)

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

N. Bowles	[signature]	11/11/13
FWS Print	FWS Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

[signature]	[signature]	11/12/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as a Certified Operator for **Sampling Fundamentals Operations**.

~~Scott Conley~~ 11/12/13 DAVE CAPELLE	D. P. Capelle	11/12/13
Operations Manager Print	Operations Manager Signature	Date

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Barbara Briggs	H0090448	11/4/2013			
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OSE

CHPRC TRAINING COMPLETION RECORD
Form A

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STUDENT

HID/Person ID	Last Name	First Name	MI
H0090448	Briggs	Barbara	E

TRAINING

Course No.	Date Completed	CACN	Company
301810	8/21/12		CHPRC

Course Title: Multi-Media Sampling

TRAINING STATUS CODE:
(If blank, default is Complete)

- [x] Complete
- [ ] Fail
- [ ] Incomplete

Test Number ______
Checklist Number ______
Score(s) ______

COMMENTS:

SIGNATURES/DATES

The ~~test~~ and/or ~~training~~ material was reviewed and discussed with the employee.

BE Briggs — 8/21/12
(Employee Signature) (Date)

~~Tim Bender~~ James LaPointe — [signature] — 8/28/12
(Authenticator Print Name) (Authenticator Signature) (Date) (MSIN)

KC Patterson
CHPRC — [signature] — AUG 21 2012
(Instructor Print Name) (Instructor Signature) (Date) (MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6005-132 (REV 0)

10007

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Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide

Multi-Media Sampling

Course #301810

Revision 0b

5/16/2011

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- OJT Guide
- OJE

Prepared By:	Tim Bender	*Signature on File*	*4/29/2009*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	Danniel P. Connolly	*Signature on File*	*4/30/2009*
S&GRP NCO	Print	*Signature*	Date:
Approved By:	Jim Hogan	*Signature on File*	*4/30/2009*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	Scott Conley	*Signature on File*	*4/30/2009*
S&GRP Operations Manager	Print	*Signature*	Date:
Approved By:	Tim Bender	*Signature on File*	*4/30/2009*
S&GRP Training Lead	Print	*Signature*	Date:

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Trainee Print	Trainee Signature	Date

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4 ALARA

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9 **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

OJE Tasks and Requirements

Conditions
- Given the necessary tools, equipment and procedures.

Standards
- Without Operator injury.
- According to the steps of the applicable procedures.

References
- GRP-FS-04-G-005, Control Room Monitoring Instruments
- GRP-FS-04-G-013, Laboratory Cleaning of Sampling Equipment
- GRP-FS-04-G-015, Bottle Preservation
- GRP-FS-04-G-016, Chain of Custody/Sample Analysis Request
- GRP-FS-04-G-022, Biotic Sampling
- GRP-FS-04-G-023, Container Sampling
- GRP-FS-04-G-024, Collecting PCB Wipe Samples
- GRP-FS-04-G-029, Non-VOC Soil & Sediment Sample
- GRP-FS-04-G-030, VOC Soil & Sediment Sample
- GRP-FS-04-G-033, Routine and Non-Routine Soil Gas Sampling
- GRP-FS-04-G-038, pH Screening in Soil & Waste
- GRP-FS-04-G-043, SUMMA Canister Sampling

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Task Evaluations:

Task#	Requirement:	Date	Eval. Initials
1.	Review an AJHA	AUG 2 1 2012	
Standard:			

http://ajha.rl.gov/ajhaweb/secure/ReportsOnly/RO_Menu/RO_Login.cfm

Task#	Requirement:	Date	Eval. Initials
2.	Log Photo documentation into logbook	AUG 2 1 2012	
Standard:	PRC-PRO-IRM-10863		

SIRS is a data base used by the Multi-Media group to track and produce the necessary documentation for identifying the samples taken for a specific sampling event.

Task#	Requirement:	Date	Eval. Initials
3.	SIRS Generate COC	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
4.	SIRS Generate SAF	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
5.	SIRS Enter information into the logbook management	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
6.	SIRS Enter information into shipping management	AUG 2 1 2012	
Standard:			

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Task#	Requirement:	Date	Eval. Initials
7.	SIRS Obtain Reports	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
8.	SIRS use system data management	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
9.	SIRS Generate Sample I.D.	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
10.	SIRS Generate analysis information	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
11.	SIRS Generate preservation type for sample container	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
12.	SIRS Generate Hold Times	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
13.	SIRS Type of Matrix	AUG 2 1 2012	
Standard:			

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Task#	Requirement:	Date	Eval. Initials
14.	SIRS Identify bottle size and type	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
15.	SIRS Identify Laboratory	AUG 2 1 2012	
Standard:			

For anyone with a GPS receiver, the system will provide location and time. GPS provides accurate location and time information for an unlimited number of people in all weather, day and night, anywhere in the world.

Task#	Requirement:	Date	Eval. Initials
16.	Use a GPS to identify sample location	AUG 2 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
17.	Collect a Simple random sample	AUG 2 1 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
18.	Collect a Stratified random sample	AUG 2 1 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
19.	Collect a Cluster (Area) Random Sampling	AUG 2 1 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
20.	Collect a multi incremental sample	AUG 2 1 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

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Task#	Requirement: Biotia Sampling	Date	Eval Initials
21.	**Sample Vegetation**	AUG 2 0 2012	
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Biotia Sampling	Date	Eval Initials
22.	**Animal Sampling (Insects Reptiles and small mammals)**	AUG 2 0 2012	
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Container Sampling	Date	Eval Initials
23.	**Soil/Sediment Sampling**	AUG 2 0 2012	
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
24.	**Liquid/Sediment/Sludge Sampling**	AUG 2 0 2012	
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval Initials
25.	**Representative Sampling of Miscellaneous Solid Materials**	AUG 2 0 2012	
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
26.	**Stratified Soil/Sediment Sampling**	AUG 2 0 2012	
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval Initials
27.	**Homogeneous/heterogeneous/Compositing**	AUG 2 0 2012	
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval Initials
28.	**Wiping/Smears(PBC)**	AUG 2 0 2012	
Standard:	GRP-FS-04-G-024		

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Task#	Requirement: Sampling Approach	Date	Eval. Initials
29.	**Investigative Sampling**	AUG 2 0 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
30.	**Destructive/Non-Destructive Sampling**	AUG 2 0 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
31.	**Biased-Unbiased Sampling**	AUG 2 0 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
32.	**Scraping Sampling**	AUG 2 0 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named above against the standards outlined in this OJE document. Based on the evaluation,
I recommend BARB BRIGGS for Multi-Media Sampling certification.
(Print Name)

KC Patterson CHPRC	[signature]	AUG 21 2012
Evaluator Name [Print]	Evaluator Signature	Date

Field Work Supervisor

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

Nathan A. Bowles	[signature]	8/21/12
Field Work Supervisor (Print)	~~Training Representative~~ Field Work Supervisor Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

James LaPointe	[signature]	8/23/12
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as Certified for Multi-Media Sampling certification.
certification.

Dave Capello	D.P. Capello	8/23/12
Operations Manager Print	Operations Manager Signature	Date

Candidate Name:	Barbara Briggs	HID#:	H0090448	Date Issued:	08/14/2012	Initial Cert.	Re-Cert.	Page #
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The information contained in this report is from the Mission Support Alliance Training Records office [redacted] If you have questions or need clarification on the information below, please contact the Training Records office by calling either 509-376-8671 or 509-372-2407. [redacted]

2/21/2014 1

Name: Fulton, John C
HID: 0058219

Course#:	Course Title	LM ENRLMT DESCR	LM ACT CD	Completion
301805	S&GRP SAMPLING FUNDAMENTALS CLASSROOM	TRI_REFERENCE_HNF =	301805:0004	12/16/2008
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0009	05/05/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0018	07/23/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10001	07/21/2011
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10028	07/10/2013
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10005	04/01/2012

[redacted]

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COURSE COMPLETION ROSTER

Course No.	Course Title	Date Completed	Records Use Only
301805	Sampling Fundamentals	12-16-2008	RECEIVED JAN 29 2009
Session No. 0004 *Records Use Only*	**Location** 2101M/Room 222	**Beginning Date/Time**	**Billing Info** ☐ BILLABLE CLASS ☐ NON-BILLABLE CLASS

NOTE: IN ORDER TO OBTAIN CREDIT FOR CLASS, FILL OUT FORM ACCURATELY:
1. PRINT NAME IN FORMAT LAST, FIRST, MI (UNLESS NAME IS ALREADY PROVIDED).
2. SIGN NAME IN PERMANENT INK AND PROVIDE REQUESTED INFORMATION.
3. IF YOU DO NOT HAVE A HID OR PAYROLL NUMBER, CONTACT YOUR INSTRUCTOR TO COMPLETE A TRAINING COMPLETION RECORD, FORM A-6001-539.

	Hanford ID (HID) or Person ID	Print Name (Last, First, MI)	Signature	Company	CACN (Charge Code)	Billing Code *See Billing Codes Below
1	[redacted]					
2						
3	0058219	Fulton John C	[illegible]	CHPRC		
4	[redacted]					
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Instructor's Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Tim Bender Tim C Bender	12-16-08/B3-19	Tim Bender Tim Bender	12-16-08/B3-19

COMMENTS:

UNUSED BLOCKS ON COMPLETED FORM NEED NOT BE MARKED N/A OR LINED OUT.

*BILLING CODES: (CB) Complete Bill, (CN) Complete No-Bill, (FB) Fail Bill, (IB) Incomplete Bill, (IN) Incomplete No-Bill, (NB) No Show Bill, (XX) Cancel. IF BLANK, WILL DEFAULT TO COMPLETE BILL (CB).

DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60 [redacted]

A-6001-541 (REV 2)

DJT

TRAINING COMPLETION RECORD
Form A

Records Use Only

RECEIVED
JUL 17 2013
10078

STUDENT

HID/Person ID	Last Name	First Name	MI
H0058219	Fulton	Chris	

TRAINING

Course No.	Date Completed	CACN	Company
301806	7/10/13		CHPRC

Course Title Sampling Fundamentals

TRAINING STATUS CODE:
(If blank, default is Complete)

- (●) Complete
- ( ) Fail
- ( ) Incomplete

Test Number N/A

Checklist Number

Score(s)

COMMENTS:

OJE ATTACHED

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

[signature] (Employee Signature)		7/10/13 (Date)	
~~TIM C BENDER~~ James LaPointe (Authenticator Print Name)	[signature] (Authenticator Signature)	7/10/13 (Date)	R3-23 ~~R3-19~~ (MSIN)
BE Briggs (Instructor Print Name)	BE Briggs (Instructor Signature)	7/10/13 (Date)	(MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6001-539 (REV 1)

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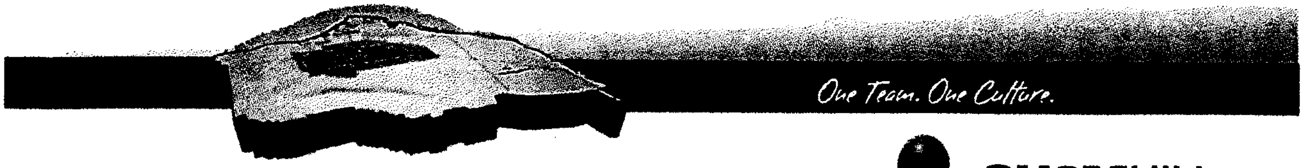

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide
S&GRP Sampling Fundamentals

Course #301806
Revision 3, 8/9/2012

The signatures below represent review and approval of the following training materials:

- Student Manual
- OJT Guide
- OJE

Prepared By:	Jim LaPointe	*Signature on file*	*8/9/2012*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	Barbara Briggs	*Signature on file*	*8/9/2012*
S&GRP Union NCO Rep.	Print	Signature	Date:
Approved By:	Nathan Bowles	*Signature on file*	*8/9/2012*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	Scott Conley	*Signature on file*	*8/9/2012*
S&GRP Senior Technical Lead	Print	*Signature*	Date:
Approved By:	David Capelle	*Signature on file*	*8/9/2012*
S&GRP Operations Manager	Print	*Signature*	Date:

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Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

ChrisFulton		7/10/13
Trainee Print	Trainee Signature	Date

Change Record

Rev 0. This is the initial issue of this training and certification package. This training and certification package is based upon 301811 - NCO Routines Sampling Task List Rev. 0 dated 01/19/2009. This package will be updated as any changes or modifications are made to the qualification for Routines Sampling activities.

Change made to incorporate new Field Logging and Electronic Data Gathering (FLEDG) system. Date 5-18-2009

Added the following to S.F. Cert on 6/4/2009 to REV.2

- Add new chemical to the preservation dispenser
- Added new Rugged Reader/LT700 water level transducer
- Clarified preservation with pipette and dispenser
- Fill out RULS
- Obtain HPW with C.S. NCO permission
- Added P.O.# to RULS instruction
- Added a task for filling out COC for other organizations

10/14/09 – Rev 2a; Updated procedure reference throughout.

05/16/11 – Rev 2b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/Material Condition
2. Safety Responsibilities
3. Safeguards & Security Policy
4. ALARA Administration Control Levels
5. Procedure Compliance Expectations
6. Self-Checking Principles
7. Safety Communication

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but <u>DO NOT PROMPT</u> unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

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OJE Tasks and Requirements

Conditions

- Given the necessary tools, equipment and procedures.

Standards

- Without Operator injury.
- According to the steps of the applicable procedures.

References

GRP-FS-04-G-014, Measurement of Groundwater Levels
GRP-FS-04-G-015, Bottle Preservation
GRP-FS-04-G-025: Millipore Water System
Site Specific Health and Safety Plan (HASP) Rev. 3
GRP Off-Road Driving

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Knowledge Evaluation Questions:

Q1.	Does it make a difference whether a plastic or glass container is used to collect samples?	Eval. Initials	Date
A)	The type of sample container used is of the utmost importance to maintaining the integrity of the sample. Sample containers typically are made of plastic or glass, but one material may be preferred over another for a specific analysis.	bb	7/9/13

Q2.	Describe how sample bottles and containers are verified / certified clean.	Eval. Initials	Date
A)	*The containers must have a LOT number (aka PROD. #), which matches the LOT number on the green QA sticker, (which matches the LOT number on the Certificate of Analysis COA).*	bb	7/9/13

Q3.	Where is the P.O. number recorded for tracking purposes?	Eval. Initials	Date
A)	*RULS*	bb	7/9/13

Q4.	Where is the P.O. number found to record the information necessary for tracking?	Eval. Initials	Date
A)	*On the QA acceptance sticker.*	bb	7/9/13

Q5.	What are the two primary methods used to preserve samples?	Eval. Initials	Date
A)	*Chemical additives (pH Control) and cooling (including freezing)*	bb	7/9/13

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		Eval. Initials	Date
Q6.	What is the purpose of the Reagent Usage Log sheet?		
A)	*Provides the ability to link laboratory sample results - to the reagents used in the preservation process. When reagents are used in the pre-preservation process – verify brand name, lot number, purchase order# chemical name, concentration, and date preservatives are introduced into the process, is recorded on the Regent Usage Log Sheet.*	bb	7/10/13

		Eval. Initials	Date
Q7.	Where are the LOT#s for the new chemical located?		
A)	*On the chemical container label.*	bb	7/10/13

		Eval. Initials	Date
Q8.	Where do you document the LOT#s for the preservation chemical added to the sampling process?		
A)	*On the dispenser lid (**this is done without procedure steps and the label is not recognized in any documentation. We still want the knowledge expressed**) and on the RULS*	bb	7/10/13

		Eval. Initials	Date
Q9.	Describe how preserved sample bottles are controlled to prevent tampering.		
A)	*Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles. Normally, this is accomplished by locking the bottles in a secure location or in a sample vehicle which is locked when not attended.*	bb	7/10/13

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		Eval. Initials	Date
Q10.	Explain the purpose of the Preservative Volume Table (Attachment 2, GRP-FS-04-G-015, Bottle Preservation).		
A)	*The Preservative Volume Table directs the appropriate volume of preservative – for a given volume of sample container so Lab criterion is met and the DOT regulations are complied with.*	bb	7/10/13

		Eval. Initials	Date
Q11.	Using the Preservative Volume Table, what volume of Sulfuric Acid (H_2SO_4) preservative is required for a 250mL container?		
A)	.125mL.	bb	7/10/13

		Eval. Initials	Date
Q12.	Using the Preservative Volume Table, what volume of preservative of Sodium Thiosulphate ($Na_2S_2O_3$) is required for a 500mL container?		
A)	*0.5mL.*	bb	7/10/13

		Eval. Initials	Date
Q13.	Explain the proper storage location and applicable storage processes for preservation chemicals.		
A)	*All chemicals shall be stored in the proper chemical storage unit. Unopened acids and bases shall be stored in their original containers, inside compatible chemical storage cabinets.*	bb	7/10/13

		Eval. Initials	Date
Q14.	Explain the difference in "trace metals" Nitric Acid and Ultrex Nitric Acid.		
A)	*The Ultrex (when manufactured) utilizes high purity water, thus eliminates the impurities of trace metals.*	bb	7/10/13

		Eval. Initials	Date
Q15.	Is it acceptable to substitute "trace metals" Nitric Acid with Ultrex Nitric Acid?		
A)	*Yes.*	bb	7/10/13

		Eval. Initials	Date
Q16.	Is it acceptable to substitute Ultrex Nitric Acid with "trace metals" nitric acid?		
A)	*No*	bb	7/10/13

		Eval. Initials	Date
Q17.	For the hood in the sample preparation area, state how flow in the hood is verified(There is two things).		
A)	*Check the airflow by observing the monitor, or in the absence of a monitor use a "kimwipe" taped to the open sash. The vent hood is tested monthly for hood flow by vent and balance personnel.*	bb	7/10/13

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		Eval. Initials	Date
Q18.	Explain why flow is required in the chemical preservation hood.		
A)	*All work involving hazardous chemicals should be performed inside a ventilation hood to protect the individual from the hazard.*	bb	7/10/13

		Eval. Initials	Date
Q19.	Who is notified first in the event of a spill **(Health or Environment Consequences)**?		
A)	*911(Land Line) 373-0911 (Cell Phone)0 – Hanford Fire Department.*	bb	7/10/13

		Eval. Initials	Date
Q20.	Who is contacted when the waste containers are full?		
A)	*If the Satellite Accumulation Area (SAA) is full, contact your supervisor to get the SAA waste area properly prepared for further use. Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity.*	bb	7/10/13

		Eval. Initials	Date
Q21.	*When is a SAA area container considered full?*		
A)	*Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity. This is recommended to be no higher than the start of the shoulder of the container in order to allow room to add other chemicals for neutralization of the waste (if needed). Waste containers shall not be filled above the neckline or greater than 90% volume.*	bb	7/10/13

		Eval. Initials	Date
Q22.	What is the acceptable Meg ohm-cm value, for the HPW that is used for the cleaning process?		
A)	*The MYRON Conductivity meter in room 109 must read >15 Megohm-cms when filling the reservoirs with high purity water.*	bb	7/9/13

		Eval. Initials	Date
Q23.	What is the proper response, if the Milli-Q/Biocel System does not read 18.2 Mega Ohms-cm?		
A)	*Do not use the ultra high purity water (UHPW) and notify the operations manager or FWS.*	bb	7/9/13

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Place a checkmark for Initial Certification or Re-Certification

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Q24.	Explain how the reference point is identified on a well.	Eval. Initials	Date
A)	*This point is generally marked by an "X," usually on the north side of the casing. When the RP cannot be readily identified because a stamped "X" is not present, assume the RP is the top of the outer casing on the north side. The information is normally provided with associated paperwork.*	bb	7/10/13

Q25.	Explain how the measuring point is identified or determined by the operator.	Eval. Initials	Date
A)	*The measuring point is usually identified on the associated paperwork. However, if not then the operator taking the measurement identifies where the measurement was taken.*	bb	7/10/13

Q26.	How is the vertical offset between the RP and MP determined?	Eval. Initials	Date
A)	*It is the measured difference in height between where the RP and MP are located.*	~~7/10/13~~ bb	7/10/13

Q27.	What is the power supply for the e-tape?	Eval. Initials	Date
A)	*9 volt battery*	bb	7/10/13

Q28.	How does the operator determine when the sensing probe has contacted water within the well?	Eval. Initials	Date
A)	*An audible alarm will be emitted by the e-tape.*	bb	7/10/13

Q29.	How do you know the battery and audible alarm are functioning?	Eval. Initials	Date
A)	*Pressing the test switch will provide an audible alarm if the battery and alarm are working.*	bb	7/10/13

Q30.	Does the test switch verify that the probe is working properly?	Eval. Initials	Date
A)	*No.*	bb	7/10/13

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		Eval. Initials	Date
Q31.	How is the sensitivity of the probe set?		
A)	*The sensitivity of the probe can be adjusted using the sensitivity knob. It also acts as the ON-OFF switch.*	bb	7/9/13

		Eval. Initials	Date
Q32.	Explain how the standardization of the e-tape is verified to be current.		
A)	*A standardization sticker is placed on each instrument. In order to use the e-tape the standardization must be current.*	bb	7/9/13

		Eval. Initials	Date
Q33.	Why is it important to avoid excessive speed while lowering the e-tape slowly into a well?		
A)	*Lower the e-tape slowly to prevent "bird caging", cutting, and/or damaging the e-tape. It is also important to lower the E-tape slowly to minimize how much e-tape gets contaminated by the well contents and if the water is shallow enough the sensing probe may become fouled by mud or sediment within the well which may cause the sensing probe to emit a continuous sound or no sound at all.*	bb	7/9/13

		Eval. Initials	Date
Q34.	When removing the e-tape from the well it must be decontaminated. How much of the e-tape is required to be decontaminated?		
A)	*Three (3) feet beyond that which contacted the well water.*	bb	7/9/13

		Eval. Initials	Date
Q35.	When lowering the e-tape into a well, what protective equipment should be worn and why?		
A)	*Leather gloves should be worn to prevent possible burn/blistering of the hands while trying to control the e-tape speed.*	bb	7/9/13

		Eval. Initials	Date
Q36.	How is the sensing probe verified to be operational prior to using it?		
A)	*Turn the e-tape "ON" and place the probe in a cup of plain water. The alarm should sound if everything is functioning properly.*	bb	7/9/13

		Eval. Initials	Date
Q37.	If the battery is dead and must be replaced, what is done with the dead battery?		
A)	*Place it in the battery accumulation area for future disposal.*	bb	7/9/13

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S&GRP Sampling Fundamentals Certification OJE Guide — CH2MHILL Plateau Remediation Company — Course #301806, Revision 3 8/9/12

		Eval. Initials	Date
Q38.	How accurate must the operator attempt to read the actual depth-to-water when taking measurements?		
A)	*Within 1 mm.*	bb	7/9/13

		Eval. Initials	Date
Q39.	When taking the two readings for the water level measurements what must the accuracy be between the two readings?		
A)	*According to the procedure take two consistent measurements that agree within 6 mm to assure accuracy of measurement (The 6mm is the standard from the EPA for an accuracy of two consecutive readings from the well).*	bb	7/9/13

		Eval. Initials	Date
Q40.	What measuring device is used when measuring an artesian well water level?		
A)	*A data device with a transducer (The Rugged Reader with the LT500).*	bb	7/9/13

		Eval. Initials	Date
Q41.	Name two ways of recording well data use at S&GRP?		
A)	*FLEDG and Water level measurement form.*	bb	7/9/13

		Eval. Initials	Date
Q42.	What is the minimum equipment that must be carried when driving off road?		
A)	*In all cases of off-road travel, a hand shovel, fire extinguisher, and communications (cell phone or radio) must always be provided in the vehicle.*	bb	7/9/13

		Eval. Initials	Date
Q43.	Who provides written instructions for off road driving yearly?		
A)	*Each year the Hanford Fire Department provides specific written guidance for off-road driving.*	bb	7/9/13

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Chris Fulton	H0058219	6/26/2013			
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Skills Check

NOTE: The candidate may use a performance level applicable for the job or situation, which may be Perform, Simulate and/or Discuss. Exempt/manager OJT candidates may only Simulate or Discuss these tasks.

Task #	Task Description	Training Method	Eval. Initials	Date
TSK 1	Use the AJHA to identify any hazards and limits associated with the bottle preservation activities.	P / S / D	bb	7/10/13
TSK 2	Fill out a Reagent Usage Logsheet.	P / S / D	bb	7/10/13
TSK 3	Pre-preserve sample bottles using the following: ☐ Metered/pump dispenser ☑ Large manual pipette ☑ Small manual pipette Auto pipette	P / S / D	bb	7/10/13
TSK 4	Fill out COC to deliver bottles to other organizations.	P / S / D	bb	7/10/13
STD	Reference: GRP-FS-04-G-015			
TSK 5	Identify the waste containers which are to be used for each type of preservation waste.	P / S / D	bb	7/10/13
TSK 6	Prepare preserved sample bottles for other organizations.	P / S / D	bb	7/10/13
TSK 7	Obtain HPW from the cleaning station. **NOTE:** Do not obtain HPW without certified cleaning station operators concurrence.	P / S / D	bb	7/10/13
TSK 8	Acquire the appropriate Ultra High Purity Water (UHPW) necessary to accomplish sampling tasks.	P / S / D	bb	7/10/13

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Task #	Task Description	Training Method	Eval. Initials	Date
TSK 9	Perform a Water Level Measurement Using an E-tape.	P / S / D	bb	7/10/13
TSK 10	Perform a Water Level Measurement Using the Rugged Reader with the LT500	P / S / D	bb	7/10/13
TSK 11	Complete all sections of Groundwater Water Level Measurement Form(s) in the applicable procedure.	P / S / D	bb	7/10/13
TSK 12	Input well data using (FLEDG) Field Logging and Electronic Data Gathering.	P / S / D	bb	7/10/13

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Chris Fulton	H0058219	6/26/2013			
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COMMENTS

Record any comments you have related to this OJE Card (i.e. details including specific questions asked, inadequate answers, termination of OJE, etc.). Refer to the task or requirement number when making your comments.

Candidate Name:	Chris Fulton	HID#:	H0058219	Date Issued:	6/26/2013	Initial Cert.	Re-Cert.	Page #
					Place a checkmark for Initial Certification or Re-Certification	○	◉	14 of 15

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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named below against the standards outlined in this OJT/E document. Based on the evaluation,

I RECOMMEND Chris Fulton for CERTIFICATION.

Print Name

BE Briggs	BE Briggs	7/10/13
Evaluator Print	Evaluator Signature	Date

Field Work Supervisor (FWS)

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

P. Hinojosa		7/10/13
FWS Print	FWS Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

James LaPointe		7/10/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as a Certified Operator for **Sampling Fundamentals Operations**.

~~Scott Conley~~ Dave Capelle	D.P. Capelle	7/10/13
Operations Manager Print	Operations Manager Signature	Date

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Chris Fulton	H0058219	6/26/2013			
Place a checkmark for Initial Certification or Re-Certification			○	⦿	15 of 15

CHPRC TRAINING COMPLETION RECORD
Form A

OJE

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APR 10 2012
10005

STUDENT

HID/Person ID	Last Name	First Name	MI
H0058219	Fulton	John	C

TRAINING

Course No.	Date Completed	CACN	Company
301810	APR 01 2012		CHPRC

Course Title Multi-Media Sampling

TRAINING STATUS CODE:
(If blank, default is Complete)

- ◯ Complete
- ◯ Fail
- ◯ Incomplete

Test Number ______

Checklist Number ______

Score(s) ______

COMMENTS:

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

(Employee Signature) 4-1-12 (Date)

Tim Bender Gary Shawver (Authenticator Print Name) (Authenticator Signature) 04/9/12 (Date) (MSIN)

KC Patterson CHPRC (Instructor Print Name) (Instructor Signature) APR 01 2012 (Date) (MSIN)

One Team. One Culture.

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide

Multi-Media Sampling

Course #301810
Revision 0b
5/16/2011

The signatures below represent review and approval of the following training materials:

- OJT Guide
- OJE

Prepared By:	**Tim Bender**	*Signature on File*	*4/29/2009*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	**Danniel P. Connolly**	*Signature on File*	*4/30/2009*
S&GRP NCO	Print	*Signature*	Date:
Approved By:	**Jim Hogan**	*Signature on File*	*4/30/2009*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	**Scott Conley**	*Signature on File*	*4/30/2009*
S&GRP Operations Manager	Print	*Signature*	Date:
Approved By:	**Tim Bender**	*Signature on File*	*4/30/2009*
S&GRP Training Lead	Print	*Signature*	Date:

Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

John Fulton	[signature]	4-1-12
Trainee Print	Trainee Signature	Date

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
John Fulton	H0058219	03/29/2012			
Place a checkmark for Initial Certification or Re-Certification			◉	○	1 of 10

Change Record

This is revision 0. This section will be updated as any changes or modifications are made to the qualification for Fundamental Sampling activities.

10/14/09 – Rev 0a; Updated procedure reference throughout.

05/16/11 – Rev 0b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/
2. Procedure Compliance Expectations
3. Safety Communication//Two way communication4.
4. ALARA

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

OJE Tasks and Requirements

Conditions
- Given the necessary tools, equipment and procedures.

Standards
- Without Operator injury.
- According to the steps of the applicable procedures.

References
- GRP-FS-04-G-005, Control Room Monitoring Instruments
- GRP-FS-04-G-013, Laboratory Cleaning of Sampling Equipment
- GRP-FS-04-G-015, Bottle Preservation
- GRP-FS-04-G-016, Chain of Custody/Sample Analysis Request
- GRP-FS-04-G-022, Biotic Sampling
- GRP-FS-04-G-023, Container Sampling
- GRP-FS-04-G-024, Collecting PCB Wipe Samples
- GRP-FS-04-G-029, Non-VOC Soil & Sediment Sample
- GRP-FS-04-G-030, VOC Soil & Sediment Sample
- GRP-FS-04-G-033, Routine and Non-Routine Soil Gas Sampling
- GRP-FS-04-G-038, pH Screening in Soil & Waste
- GRP-FS-04-G-043, SUMMA Canister Sampling

Candidate Name:	John Fulton	HID#:	H0058219	Date Issued:	03/29/2012	Initial Cert.	Re-Cert.	Page #
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Task Evaluations:

Task#	Requirement:	Date	Eval. Initials
1.	**Review an AJHA**	MAR 0 1 2012	
Standard:			

http://ajha.rl.gov/ajhaweb/secure/ReportsOnly/RO_Menu/RO_Login.cfm

Task#	Requirement:	Date	Eval. Initials
2.	**Log Photo documentation into logbook**	MAR 0 1 2012	
Standard:	PRC-PRO-IRM-10863		

SIRS is a data base used by the Multi-Media group to track and produce the necessary documentation for identifying the samples taken for a specific sampling event.

Task#	Requirement:	Date	Eval. Initials
3.	**SIRS Generate COC**	MAR 0 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
4.	**SIRS Generate SAF**	MAR 0 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
5.	**SIRS Enter information into the logbook management**	MAR 0 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
6.	**SIRS Enter information into shipping management**	MAR 0 1 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
7.	SIRS Obtain Reports	MAR 1 2 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
8.	SIRS use system data management	MAR 1 2 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
9.	SIRS Generate Sample I.D.	MAR 1 2 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
10.	SIRS Generate analysis information	MAR 1 2 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
11.	SIRS Generate preservation type for sample container	MAR 1 2 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
12.	SIRS Generate Hold Times	MAR 1 2 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
13.	SIRS Type of Matrix	MAR 1 2 2012	
Standard:			

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John Fulton	H0058219	03/29/2012	●	○	6 of 10

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Task#	Requirement:	Date	Eval. Initials
14.	**SIRS Identify bottle size and type**	MAR 12 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
15.	**SIRS Identify Laboratory**	MAR 12 2012	
Standard:			

For anyone with a GPS receiver, the system will provide location and time. GPS provides accurate location and time information for an unlimited number of people in all weather, day and night, anywhere in the world.

Task#	Requirement:	Date	Eval. Initials
16.	**Use a GPS to identify sample location**	MAR 12 2012	
Standard:			

Task#	Requirement:	Date	Eval. Initials
17.	**Collect a Simple random sample**	MAR 12 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
18.	**Collect a Stratified random sample**	MAR 12 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
19.	**Collect a Cluster (Area) Random Sampling**	MAR 12 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
20.	**Collect a multi incremental sample**	MAR 12 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

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Task#	Requirement: Biotia Sampling	Date	Eval. Initials
21.	**Sample Vegetation**	MAR 24 2012	
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Biotia Sampling	Date	Eval. Initials
22.	**Animal Sampling (Insects Reptiles and small mammals)**	MAR 24 2012	
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Container Sampling	Date	Eval. Initials
23.	**Soil/Sediment Sampling**	MAR 24 2012	
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
24.	**Liquid/Sediment/Sludge Sampling**	MAR 24 2012	
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
25.	**Representative Sampling of Miscellaneous Solid Materials**	MAR 24 2012	
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
26.	**Stratified Soil/Sediment Sampling**	MAR 24 2012	
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
27.	**Homogeneous/heterogeneous/Compositing**	MAR 24 2012	
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
28.	**Wiping/Smears(PBC)**	MAR 24 2012	
Standard:	GRP-FS-04-G-024		

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Task#	Requirement: Sampling Approach	Date	Eval. Initials
29.	**Investigative Sampling**	MAR 24 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
30.	**Destructive/Non-Destructive Sampling**	MAR 24 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
31.	**Biased-Unbiased Sampling**	MAR 24 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
32.	**Scraping Sampling**	MAR 24 2012	
Standard:	Ref: RCRA Sampling Technical Guide		

Candidate Name:	John Fulton	HID#:	H0058219	Date Issued:	03/29/2012	Initial Cert.	Re-Cert.	Page #
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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named above against the standards outlined in this OJE document. Based on the evaluation,
I recommend Chris Fulton (John) for Multi-Media Sampling certification.
(Print Name)

KC Patterson CHPRC		APR 0 1 2012
Evaluator Name [Print]	Evaluator Signature	Date

Field Work Supervisor

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

J G Hogan	J T Hogan	04/02/12
Field Work Supervisor (Print)	Training Representative Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

Amy Shawver		04/9/12
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as Certified for Multi-Media Sampling certification.
certification.

Dave Capelle	D.P. Capelle	4/5/2012
Operations Manager Print	Operations Manager Signature	Date

The information contained in this report is from the Mission Support Alliance Training Records office [redacted] If you have questions or need clarification on the information below, please contact the Training Records office by calling either 509-376-8671 or 509-372-2407.

2/21/2014 [redacted] 1

Name: Hall, Frank M
HID: 0026815

Course#:	Course Title	LM_ENRLMT_DESCR	LM_ACT_CD	Completion
301805	S&GRP SAMPLING FUNDAMENTALS CLASSROOM	TRI_REFERENCE_HNF =	301805:0006	12/17/2008
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0011	07/07/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0059	04/18/2011
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10019	03/11/2013
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10020	03/11/2013
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0008	09/02/2003
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0013	11/29/2005
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0023	01/08/2008
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0030	12/17/2009
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10003	02/07/2012
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10010	02/05/2014

01/30/2009 14:38 FAX 5093734509 FH Groundwater Field Ops 001

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COURSE COMPLETION ROSTER

Records Use Only

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Course No.	Course Title	Date Completed
301805	Sampling Fundamentals	12-17-2008

Session No.	Location	Beginning Date/Time
0006 *Records Use Only*	2101M/Room 222	

NOTE: IN ORDER TO OBTAIN CREDIT FOR CLASS, FILL OUT FORM ACCURATELY:
1. PRINT NAME IN FORMAT LAST, FIRST, MI (UNLESS NAME IS ALREADY PROVIDED).
2. SIGN NAME IN PERMANENT INK AND PROVIDE REQUESTED INFORMATION.
3. IF YOU DO NOT HAVE A HID OR PAYROLL NUMBER, CONTACT YOUR INSTRUCTOR TO COMPLETE A TRAINING COMPLETION RECORD, FORM A-6001-539.

Billing Info
☐ BILLABLE CLASS
☐ NON-BILLABLE CLASS

	Hanford ID (HID) or Person ID	Print Name (Last, First, MI)	Signature	Company	CACN (Charge Code)	Billing Code *See Billing Codes Below
1	[redacted]					
2						
3						
4						
5						
6						
7	0026815	HALL, FRANK M	[signature]	CHPRC		
8						
9						
10						
11						
12						
13						
14						
15						
16						

Instructor's Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Tim Bender Tim C Bender	12-17-08/R3-19	Tim Bender Tim Bender	12-17-08/R3-19

COMMENTS:

UNUSED BLOCKS ON COMPLETED FORM NEED NOT BE MARKED N/A OR LINED OUT.

*BILLING CODES: (CB) Complete Bill, (CN) Complete No-Bill, (FB) Fail Bill, (IB) Incomplete Bill, (IN) Incomplete No-Bill, (NB) No Show Bill, (XX) Cancel. IF BLANK, WILL DEFAULT TO COMPLETE BILL (CB).

DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60 [redacted]

A-6001-541 (REV 2)

OJE

TRAINING COMPLETION RECORD
Form A

Records Use Only

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10030

STUDENT

HID/Person ID	Last Name	First Name	MI
H0026815	Hall	Frank	M

TRAINING

Course No.	Date Completed	CACN	Company
301806			CHPRC

Course Title Sampling Fundamentals

TRAINING STATUS CODE:
(If blank, default is Complete)

- (●) Complete
- ( ) Fail
- ( ) Incomplete

Test Number N/A

Checklist Number

Score(s)

COMMENTS:

OJE ATTACHED

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

F. M. Hall (Employee Signature)		3/7/13 (Date)	
~~TIM C BENDER~~ Jim LaPointe JB 3/7/12 (Authenticator Print Name)	(Authenticator Signature)	3/11/13 (Date)	R3-21 ~~R3-19~~ (MSIN) JB 3/11/13
Lesley D. WALL (Instructor Print Name)	Lesley D. Wall (Instructor Signature)	3/7/12 (Date)	(MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6001-539 (REV 1)

10020

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide
S&GRP Sampling Fundamentals

Course #301806

Revision 3, 8/9/2012

The signatures below represent review and approval of the following training materials:

- Student Manual
- OJT Guide
- OJE

Prepared By:	**Jim LaPointe**	*Signature on file*	*8/9/2012*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	**Barbara Briggs**	*Signature on file*	*8/9/2012*
S&GRP Union NCO Rep.	Print	Signature	Date:
Approved By:	**Nathan Bowles**	*Signature on file*	*8/9/2012*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	**Scott Conley**	*Signature on file*	*8/9/2012*
S&GRP Senior Technical Lead	Print	*Signature*	Date:
Approved By:	**David Capelle**	*Signature on file*	*8/9/2012*
S&GRP Operations Manager	Print	*Signature*	Date:

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Frank Hall	H0026815	3/7/13			
Place a checkmark for Initial Certification or Re-Certification			○	●	1 of 15

Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

FrankHall	[signature]	3/7/13
Trainee Print	Trainee Signature	Date

Change Record

Rev 0. This is the initial issue of this training and certification package. This training and certification package is based upon 301811 - NCO Routines Sampling Task List Rev. 0 dated 01/19/2009. This package will be updated as any changes or modifications are made to the qualification for Routines Sampling activities.

Change made to incorporate new Field Logging and Electronic Data Gathering (FLEDG) system. Date 5-18-2009

Added the following to S.F. Cert on 6/4/2009 to REV.2

- Add new chemical to the preservation dispenser
- Added new Rugged Reader/LT700 water level transducer
- Clarified preservation with pipette and dispenser
- Fill out RULS
- Obtain HPW with C.S. NCO permission
- Added P.O.# to RULS instruction
- Added a task for filling out COC for other organizations

10/14/09 – Rev 2a; Updated procedure reference throughout.

05/16/11 – Rev 2b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/Material Condition
2. Safety Responsibilities
3. Safeguards & Security Policy
4. ALARA Administration Control Levels
5. Procedure Compliance Expectations
6. Self-Checking Principles
7. Safety Communication

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

Candidate Name:	Frank Hall	HID#:	H0026815	Date Issued:	3/7/13	Initial Cert.	Re-Cert.	Page #
					Place a checkmark for Initial Certification or Re-Certification	○	⦿	3 of 15

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OJE Tasks and Requirements

Conditions

- Given the necessary tools, equipment and procedures.

Standards

- Without Operator injury.
- According to the steps of the applicable procedures.

References

GRP-FS-04-G-014, Measurement of Groundwater Levels
GRP-FS-04-G-015, Bottle Preservation
GRP-FS-04-G-025: Millipore Water System
Site Specific Health and Safety Plan (HASP) Rev. 3
GRP Off-Road Driving

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Frank Hall	H0026815	3/7/13			
Place a checkmark for Initial Certification or Re-Certification			○	◉	4 of 15

Knowledge Evaluation Questions:

		Eval. Initials	Date
Q1.	Does it make a difference whether a plastic or glass container is used to collect samples?	Eval. Initials	Date
A)	The type of sample container used is of the utmost importance to maintaining the integrity of the sample. Sample containers typically are made of plastic or glass, but one material may be preferred over another for a specific analysis.	LW	3/7/13

		Eval. Initials	Date
Q2.	Describe how sample bottles and containers are verified / certified clean.	Eval. Initials	Date
A)	*The containers must have a LOT number (aka PROD. #), which matches the LOT number on the green QA sticker, (which matches the LOT number on the Certificate of Analysis COA).*	LW	3/7/13

		Eval. Initials	Date
Q3.	Where is the P.O. number recorded for tracking purposes?	Eval. Initials	Date
A)	*RULS*	LW	3/7/13

		Eval. Initials	Date
Q4.	Where is the P.O. number found to record the information necessary for tracking?	Eval. Initials	Date
A)	*On the QA acceptance sticker.*	LW	3/7/13

		Eval. Initials	Date
Q5.	What are the two primary methods used to preserve samples?	Eval. Initials	Date
A)	*Chemical additives (pH Control) and cooling (including freezing)*	LW	3/7/13

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		Eval. Initials	Date
Q6.	What is the purpose of the Reagent Usage Log sheet?		
A)	*Provides the ability to link laboratory sample results - to the reagents used in the preservation process. When reagents are used in the pre-preservation process – verify brand name, lot number, purchase order# chemical name, concentration, and date preservatives are introduced into the process, is recorded on the Regent Usage Log Sheet.*	LW	3/7/13

		Eval. Initials	Date
Q7.	Where are the LOT#s for the new chemical located?		
A)	*On the chemical container label.*	LW	3/7/13

		Eval. Initials	Date
Q8.	Where do you document the LOT#s for the preservation chemical added to the sampling process?		
A)	*On the dispenser lid (**<u>this is done without procedure steps and the label is not recognized in any documentation. We still want the knowledge expressed</u>**) and on the RULS*	LW	3/7/13

		Eval. Initials	Date
Q9.	Describe how preserved sample bottles are controlled to prevent tampering.		
A)	*Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles. Normally, this is accomplished by locking the bottles in a secure location or in a sample vehicle which is locked when not attended.*	LW	3/7/13

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Q10.	Explain the purpose of the Preservative Volume Table (Attachment 2, GRP-FS-04-G-015, Bottle Preservation).	Eval. Initials	Date
A)	*The Preservative Volume Table directs the appropriate volume of preservative – for a given volume of sample container so Lab criterion is met and the DOT regulations are complied with.*	LW	3/7/13

Q11.	Using the Preservative Volume Table, what volume of Sulfuric Acid (H_2SO_4) preservative is required for a 250mL container?	Eval. Initials	Date
A)	.125mL.	LW	3/7/13

Q12.	Using the Preservative Volume Table, what volume of preservative of Sodium Thiosulphate ($Na_2S_2O_3$) is required for a 500mL container?	Eval. Initials	Date
A)	*0.5mL.*	LW	3/7/13

Q13.	Explain the proper storage location and applicable storage processes for preservation chemicals.	Eval. Initials	Date
A)	*All chemicals shall be stored in the proper chemical storage unit. Unopened acids and bases shall be stored in their original containers, inside compatible chemical storage cabinets.*	LW	3/7/13

Q14.	Explain the difference in "trace metals" Nitric Acid and Ultrex Nitric Acid.	Eval. Initials	Date
A)	*The Ultrex (when manufactured) utilizes high purity water, thus eliminates the impurities of trace metals.*	LW	3/7/13

Q15.	Is it acceptable to substitute "trace metals" Nitric Acid with Ultrex Nitric Acid?	Eval. Initials	Date
A)	*Yes.*	LW	3/7/13

Q16.	Is it acceptable to substitute Ultrex Nitric Acid with "trace metals" nitric acid?	Eval. Initials	Date
A)	*No*	LW	3/7/13

Q17.	For the hood in the sample preparation area, state how flow in the hood is verified(There is two things).	Eval. Initials	Date
A)	*Check the airflow by observing the monitor, or in the absence of a monitor use a "kimwipe" taped to the open sash. The vent hood is tested monthly for hood flow by vent and balance personnel.*	LW	3/7/13

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Frank Hall	H0026815	3/7/13	○	◉	7 of 15

Place a checkmark for Initial Certification or Re-Certification

Q18.	Explain why flow is required in the chemical preservation hood.	Eval. Initials	Date
A)	*All work involving hazardous chemicals should be performed inside a ventilation hood to protect the individual from the hazard.*	FW	3/7/13

Q19.	Who is notified first in the event of a spill **(Health or Environment Consequences)**?	Eval. Initials	Date
A)	*911(Land Line) 373-0911 (Cell Phone)0 – Hanford Fire Department.*	FW	3/7/13

Q20.	Who is contacted when the waste containers are full?	Eval. Initials	Date
A)	*If the Satellite Accumulation Area (SAA) is full, contact your supervisor to get the SAA waste area properly prepared for further use. Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity.*	FW	3/7/13

Q21.	*When is a SAA area container considered full?*	Eval. Initials	Date
A)	*Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity. This is recommended to be no higher than the start of the shoulder of the container in order to allow room to add other chemicals for neutralization of the waste (if needed). Waste containers shall not be filled above the neckline or greater than 90% volume.*	FW	3/7/13

Q22.	What is the acceptable Meg ohm-cm value, for the HPW that is used for the cleaning process?	Eval. Initials	Date
A)	*The MYRON Conductivity meter in room 109 must read >15 Megohm-cms when filling the reservoirs with high purity water.*	FW	3/7/13

Q23.	What is the proper response, if the Milli-Q/Biocel System does not read 18.2 Mega Ohms-cm?	Eval. Initials	Date
A)	*Do not use the ultra high purity water (UHPW) and notify the operations manager or FWS.*	FW	3/7/13

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Q24.	Explain how the reference point is identified on a well.	Eval. Initials	Date
A)	*This point is generally marked by an "X," usually on the north side of the casing. When the RP cannot be readily identified because a stamped "X" is not present, assume the RP is the top of the outer casing on the north side. The information is normally provided with associated paperwork.*	LW	3/7/13

Q25.	Explain how the measuring point is identified or determined by the operator.	Eval. Initials	Date
A)	*The measuring point is usually identified on the associated paperwork. However, if not then the operator taking the measurement identifies where the measurement was taken.*	LW	3/7/13

Q26.	How is the vertical offset between the RP and MP determined?	Eval. Initials	Date
A)	*It is the measured difference in height between where the RP and MP are located.*	LW	3/7/13

Q27.	What is the power supply for the e-tape?	Eval. Initials	Date
A)	*9 volt battery*	LW	3/7/13

Q28.	How does the operator determine when the sensing probe has contacted water within the well?	Eval. Initials	Date
A)	*An audible alarm will be emitted by the e-tape.*	LW	3/7/13

Q29.	How do you know the battery and audible alarm are functioning?	Eval. Initials	Date
A)	*Pressing the test switch will provide an audible alarm if the battery and alarm are working.*	LW	3/7/13

Q30.	Does the test switch verify that the probe is working properly?	Eval. Initials	Date
A)	*No.*	LW	3/7/13

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
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Place a checkmark for Initial Certification or Re-Certification

Q31.	How is the sensitivity of the probe set?	Eval. Initials	Date
A)	*The sensitivity of the probe can be adjusted using the sensitivity knob. It also acts as the ON-OFF switch.*	LW	3/7/13

Q32.	Explain how the standardization of the e-tape is verified to be current.	Eval. Initials	Date
A)	*A standardization sticker is placed on each instrument. In order to use the e-tape the standardization must be current.*	LW	3/7/13

Q33.	Why is it important to avoid excessive speed while lowering the e-tape slowly into a well?	Eval. Initials	Date
A)	*Lower the e-tape slowly to prevent "bird caging", cutting, and/or damaging the e-tape. It is also important to lower the E-tape slowly to minimize how much e-tape gets contaminated by the well contents and if the water is shallow enough the sensing probe may become fouled by mud or sediment within the well which may cause the sensing probe to emit a continuous sound or no sound at all.*	LW	3/7/13

Q34.	When removing the e-tape from the well it must be decontaminated. How much of the e-tape is required to be decontaminated?	Eval. Initials	Date
A)	*Three (3) feet beyond that which contacted the well water.*	LW	3/7/13

Q35.	When lowering the e-tape into a well, what protective equipment should be worn and why?	Eval. Initials	Date
A)	*Leather gloves should be worn to prevent possible burn/blistering of the hands while trying to control the e-tape speed.*	LW	3/7/13

Q36.	How is the sensing probe verified to be operational prior to using it?	Eval. Initials	Date
A)	*Turn the e-tape "ON" and place the probe in a cup of plain water. The alarm should sound if everything is functioning properly.*	LW	3/7/13

Q37.	If the battery is dead and must be replaced, what is done with the dead battery?	Eval. Initials	Date
A)	*Place it in the battery accumulation area for future disposal.*	LW	3/7/13

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Frank Hall	H0026815	3/7/13	○	◉	10 of 15

Place a checkmark for Initial Certification or Re-Certification

		Eval. Initials	Date
Q38.	How accurate must the operator attempt to read the actual depth-to-water when taking measurements?		
A)	*Within 1 mm.*	LW	3/7/13

		Eval. Initials	Date
Q39.	When taking the two readings for the water level measurements what must the accuracy be between the two readings?		
A)	*According to the procedure take two consistent measurements that agree within 6 mm to assure accuracy of measurement (The 6mm is the standard from the EPA for an accuracy of two consecutive readings from the well).*	LW	3/7/13

		Eval. Initials	Date
Q40.	What measuring device is used when measuring an artesian well water level?		
A)	*A data device with a transducer (The Rugged Reader with the LT500).*	LW	3/7/13

		Eval. Initials	Date
Q41.	Name two ways of recording well data use at S&GRP?		
A)	*FLEDG and Water level measurement form.*	LW	3/7/13

		Eval. Initials	Date
Q42.	What is the minimum equipment that must be carried when driving off road?		
A)	*In all cases of off-road travel, a hand shovel, fire extinguisher, and communications (cell phone or radio) must always be provided in the vehicle.*	LW	3/7/13

		Eval. Initials	Date
Q43.	Who provides written instructions for off road driving yearly?		
A)	*Each year the Hanford Fire Department provides specific written guidance for off-road driving.*	LW	3/7/13

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Frank Hall	H0026815	3/7/13	○	◉	11 of 15

Place a checkmark for Initial Certification or Re-Certification

Skills Check

NOTE: The candidate may use a performance level applicable for the job or situation, which may be Perform, Simulate and/or Discuss. Exempt/manager OJT candidates may only Simulate or Discuss these tasks.

Task #	Task Description	Training Method	Eval. Initials	Date
TSK 1	Use the AJHA to identify any hazards and limits associated with the bottle preservation activities.	P / S / D	LW	3/7/13
TSK 2	Fill out a Reagent Usage Logsheet.	P / S / D	LW	3/7/13
TSK 3	Pre-preserve sample bottles using the following: ☑ Metered/pump dispenser ☑ Large manual pipette ☑ Small manual pipette Auto pipette ✓	P / S / D	LW	3/7/13
TSK 4	Fill out COC to deliver bottles to other organizations.	P / S / D	LW	3/7/13
STD	Reference: GRP-FS-04-G-015			
TSK 5	Identify the waste containers which are to be used for each type of preservation waste.	P / S / D	LW	3/7/13
TSK 6	Prepare preserved sample bottles for other organizations.	P / S / D	LW	3/7/13
TSK 7	Obtain HPW from the cleaning station. **NOTE:** Do not obtain HPW without certified cleaning station operators concurrence.	P / S / D	LW	3/7/13
TSK 8	Acquire the appropriate Ultra High Purity Water (UHPW) necessary to accomplish sampling tasks.	P / S / D	LW	3/7/13

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Frank Hall	H0026815	3/7/13	○	●	12 of 15

Place a checkmark for Initial Certification or Re-Certification

Task #	Task Description	Training Method	Eval. Initials	Date
TSK 9	Perform a Water Level Measurement Using an E-tape.	P S / D	LW	3/7/13
TSK 10	Perform a Water Level Measurement Using the Rugged Reader with the LT500	P S / D	LW	3/7/13
TSK 11	Complete all sections of Groundwater Water Level Measurement Form(s) in the applicable procedure.	P S / D	LW	3/7/13
TSK 12	Input well data using (FLEDG) Field Logging and Electronic Data Gathering.	P S / D	LW	3/7/13

Candidate Name:	Frank Hall	HID#:	H0026815	Date Issued:	3/7/13	Initial Cert.	Re-Cert.	Page #
Place a checkmark for Initial Certification or Re-Certification						○	●	13 of 15

COMMENTS

Record any comments you have related to this OJE Card (i.e. details including specific questions asked, inadequate answers, termination of OJE, etc.). Refer to the task or requirement number when making your comments.

Candidate Name:	Frank Hall	HID#:	H0026815	Date Issued:	3/7/13	Initial Cert.	Re-Cert.	Page #
Place a checkmark for Initial Certification or Re-Certification						○	⦿	14 of 15

Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named below against the standards outlined in this OJT/E document. Based on the evaluation,

I RECOMMEND Frank HAll for CERTIFICATION.
Print Name

Lesly D. WAll	[signature]	3/7/13
Evaluator Print	Evaluator Signature	Date

Field Work Supervisor (FWS)

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

N. Bowles	[signature]	3/7/13
FWS Print	FWS Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

JAMES LaPointe	[signature]	3/11/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as a Certified Operator for **Sampling Fundamentals Operations**.

~~Scott Conley~~ Dave Capelle	D. P. Capelle	3/11/13
Operations Manager Print	Operations Manager Signature	Date

CHPRC TRAINING COMPLETION RECORD
Form A

OJE

Records Use Only

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LCCIC

STUDENT

HID/Person ID	Last Name	First Name	MI
H0026815	Hall	Frank	M

TRAINING

Course No.	Date Completed	CACN	Company
301810	2/5/14		CHPRC

Course Title Multi-Media Sampling

TRAINING STATUS CODE:
(If blank, default is Complete)

- ◯ Complete
- ◯ Fail
- ◯ Incomplete

Test Number

Checklist Number

Score(s)

COMMENTS:

SIGNATURES/DATES

The test and/or training material was reviewed and discussed ~~with the~~ employee.

F M HALL — 1-30-14
(Employee Signature) (Date)

~~Tim Bender~~ 2/5/14 Jim LaPointe — 2/5/14 — R3-21
(Authenticator Print Name) (Authenticator Signature) (Date) (MSIN)

Chris Fulton — 1-30-14
(Instructor Print Name) (Instructor Signature) (Date) (MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6005-132 (REV 0)

ICC

One Team. One Culture.

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Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide

Multi-Media Sampling

Course #301810

Revision 0b

5/16/2011

The signatures below represent review and approval of the following training materials:

- OJT Guide
- OJE

Prepared By: S&GRP Training Representative	Tim Bender Print	*Signature on File* *Signature*	4/29/2009 Date:
Reviewed By: S&GRP NCO	Danniel P. Connolly Print	*Signature on File* *Signature*	4/30/2009 Date:
Approved By: S&GRP Field Work Supervisor	Jim Hogan Print	*Signature on File* *Signature*	4/30/2009 Date:
Approved By: S&GRP Operations Manager	Scott Conley Print	*Signature on File* *Signature*	4/30/2009 Date:
Approved By: S&GRP Training Lead	Tim Bender Print	*Signature on File* *Signature*	4/30/2009 Date:

Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

Trainee Print	Trainee Signature	Date
Frank Hall	FHall	1-30-14

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Frank Hall	H0026815	1/17/13			
Place a checkmark for Initial Certification or Re-Certification			○	◉	1 of 10

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Change Record

This is revision 0. This section will be updated as any changes or modifications are made to the qualification for Fundamental Sampling activities.

10/14/09 – Rev 0a; Updated procedure reference throughout.

05/16/11 – Rev 0b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/
2. Procedure Compliance Expectations
3. Safety Communication//Two way communication4.
4. ALARA

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

Candidate Name:	Frank Hall	HID#:	H0026815	Date Issued:	1/17/13	Initial Cert.	Re-Cert.	Page #
Place a checkmark for Initial Certification or Re-Certification						○	⦿	3 of 10

OJE Tasks and Requirements

Conditions
- Given the necessary tools, equipment and procedures.

Standards
- Without Operator injury.
- According to the steps of the applicable procedures.

References
- GRP-FS-04-G-005, Control Room Monitoring Instruments
- GRP-FS-04-G-013, Laboratory Cleaning of Sampling Equipment
- GRP-FS-04-G-015, Bottle Preservation
- GRP-FS-04-G-016, Chain of Custody/Sample Analysis Request
- GRP-FS-04-G-022, Biotic Sampling
- GRP-FS-04-G-023, Container Sampling
- GRP-FS-04-G-024, Collecting PCB Wipe Samples
- GRP-FS-04-G-029, Non-VOC Soil & Sediment Sample
- GRP-FS-04-G-030, VOC Soil & Sediment Sample
- GRP-FS-04-G-033, Routine and Non-Routine Soil Gas Sampling
- GRP-FS-04-G-038, pH Screening in Soil & Waste
- GRP-FS-04-G-043, SUMMA Canister Sampling

1010

Task Evaluations:

Task#	Requirement:	Date	Eval. Initials
1.	Review an AJHA	1/22/14	JCF
Standard:			

http://ajha.rl.gov/ajhaweb/secure/ReportsOnly/RO_Menu/RO_Login.cfm

Task#	Requirement:	Date	Eval. Initials
2.	Log Photo documentation into logbook	1/22/14	JCF
Standard:	PRC-PRO-IRM-10863		

SIRS is a data base used by the Multi-Media group to track and produce the necessary documentation for identifying the samples taken for a specific sampling event.

Task#	Requirement:	Date	Eval. Initials
3.	SIRS Generate COC	1/22/14	JCF
Standard:			

Task#	Requirement:	Date	Eval. Initials
4.	SIRS Generate SAF	1/22/14	JCF
Standard:			

Task#	Requirement:	Date	Eval. Initials
5.	SIRS Enter information into the logbook management	1/22/14	JCF
Standard:			

Task#	Requirement:	Date	Eval. Initials
6.	SIRS Enter information into shipping management	1/22/14	JCF
Standard:			

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Task#	Requirement:	Date	Eval. Initials
7.	SIRS Obtain Reports	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
8.	SIRS use system data management	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
9.	SIRS Generate Sample I.D.	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
10.	SIRS Generate analysis information	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
11.	SIRS Generate preservation type for sample container	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
12.	SIRS Generate Hold Times	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
13.	SIRS Type of Matrix	1/30/14	JF
Standard:			

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Task#	Requirement:	Date	Eval. Initials
14.	**SIRS Identify bottle size and type**	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
15.	**SIRS Identify Laboratory**	1/30/14	JF
Standard:			

For anyone with a GPS receiver, the system will provide location and time. GPS provides accurate location and time information for an unlimited number of people in all weather, day and night, anywhere in the world.

Task#	Requirement:	Date	Eval. Initials
16.	**Use a GPS to identify sample location**	1/30/14	JF
Standard:			

Task#	Requirement:	Date	Eval. Initials
17.	**Collect a Simple random sample**	1/30/14	JCF
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
18.	**Collect a Stratified random sample**	1/30/14	JF
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
19.	**Collect a Cluster (Area) Random Sampling**	1/30/14	JF
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
20.	**Collect a multi incremental sample**	1/30/14	JCF
Standard:	Ref: RCRA Sampling Technical Guide		

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Task#	Requirement: Biotia Sampling	Date	Eval. Initials
21.	**Sample Vegetation**	1/30/14	JF
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Biotia Sampling	Date	Eval. Initials
22.	**Animal Sampling (Insects Reptiles and small mammals)**	1/30/14	JF
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Container Sampling	Date	Eval. Initials
23.	**Soil/Sediment Sampling**	1/30/14	JF
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
24.	**Liquid/Sediment/Sludge Sampling**	1/30/14	JF
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
25.	**Representative Sampling of Miscellaneous Solid Materials**	1/30/14	JF
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
26.	**Stratified Soil/Sediment Sampling**	1/30/14	JF
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
27.	**Homogeneous/heterogeneous/Compositing**	1/30/14	JF
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
28.	**Wiping/Smears(PBC)**	1/30/14	JF
Standard:	GRP-FS-04-G-024		

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Task#	Requirement: Sampling Approach	Date	Eval. Initials
29.	**Investigative Sampling**	1/30/14	JCF
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
30.	**Destructive/Non-Destructive Sampling**	1/30/14	JCF
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
31.	**Biased-Unbiased Sampling**	1/30/14	JCF
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
32.	**Scraping Sampling**	1/30/14	JCF
Standard:	Ref: RCRA Sampling Technical Guide		

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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named above against the standards outlined in this OJE document. Based on the evaluation,
I recommend Frank Hall for Multi-Media Sampling certification.
(Print Name)

Chris Fulton	[signature]	1/30/14
Evaluator Name [Print]	Evaluator Signature	Date

Field Work Supervisor

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

Kyle Stiles	[signature]	2/3/14
Field Work Supervisor (Print)	Training Representative Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

James LaPointe	[signature]	2/5/14
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as Certified for Multi-Media Sampling certification.
certification.

Dave Capello	D.P. Capello	2/3/14
Operations Manager Print	Operations Manager Signature	Date

The information contained in this report is from the Mission Support Alliance Training Records office [redacted] If you have questions or need clarification on the information below, please contact the Training Records office by calling either 509-376-8671 or 509-372-2407.

2/21/2014 [redacted] 1

Name: Patterson, Kevin C
HID: 0017276

Course#:	Course Title	LM_ENRLMT_DESCR	LM_ACT_CD	Completion
301805	S&GRP SAMPLING FUNDAMENTALS CLASSROOM	TRI_REFERENCE_HNF =	301805:0007	08/13/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0008	06/22/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0066	05/24/2011
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10004	09/11/2011
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10029	08/27/2013
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0029	09/03/2009
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10001	09/14/2011
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10002	10/06/2011
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10009	09/12/2013

[redacted]

RECEIVED
Records Use Only
AUG 27 2009

COURSE COMPLETION ROSTER

Course No.	Course Title	Date Completed
301805 2	Sampling Fundamentals	8/13/2009
Session No.	**Location**	**Beginning Date/Time**
Records Use Only 8007	2101M/Bijou	8/12/2009 7:30am WB

NOTE: IN ORDER TO OBTAIN CREDIT FOR CLASS, FILL OUT FORM ACCURATELY:
1. PRINT NAME IN FORMAT LAST, FIRST, MI (UNLESS NAME IS ALREADY PROVIDED).
2. SIGN NAME IN PERMANENT INK AND PROVIDE REQUESTED INFORMATION.
3. IF YOU DO NOT HAVE A HID OR PAYROLL NUMBER, CONTACT YOUR INSTRUCTOR TO COMPLETE A TRAINING COMPLETION RECORD, FORM A-6001-539.

Billing Info
☐ BILLABLE CLASS
☐ NON-BILLABLE CLASS

	Hanford ID (HID) or Person ID	Print Name (Last, First, MI)	Signature	Company	CACN (Charge Code)	Billing Code *See Billing Codes Below
1–9	[redacted]					
10	[redacted]	Patterson, Kevin	[signature]			
11–13	[redacted]					
14						
15						
16						

Instructor's Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Tim Bender Tim Bender	8-13-09 /	Tim Bender Tim Bender	8-13-09 /

COMMENTS:

UNUSED BLOCKS ON COMPLETED FORM NEED NOT BE MARKED N/A OR LINED OUT.

*BILLING CODES: (CB) Complete Bill, (CN) Complete No-Bill, (FB) Fail Bill, (IB) Incomplete Bill, (IN) Incomplete No-Bill, (NB) No Show Bill, (XX) Cancel. IF BLANK, WILL DEFAULT TO COMPLETE BILL (CB).

DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60 [redacted]

A-6001-541 (REV 2)

OJE

TRAINING COMPLETION RECORD
Form A

Records Use Only

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AUG 29 2013
10029

STUDENT

HID/Person ID	Last Name	First Name	MI
H0017276	Patterson	Kevin	C

TRAINING

Course No.	Date Completed	CACN	Company
301806	8/27/13		CHPRC

Course Title Sampling Fundamentals

TRAINING STATUS CODE:
(If blank, default is Complete)

- (●) Complete
- ( ) Fail
- ( ) Incomplete

Test Number N/A

Checklist Number

Score(s)

COMMENTS:

OJE ATTACHED

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

Kevin Patterson — AUG 26 2013
(Employee Signature) (Date)

James LaPointe ~~TIM C BENDER~~ 8/26/13 — 8/22/13 — ~~R3-19~~ R8-27 8/27/13
(Authenticator Print Name) (Authenticator Signature) (Date) (MSIN)

C. Fulton — AUG 26 2013
(Instructor Print Name) (Instructor Signature) (Date) (MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6001-539 (REV 1)

10029

Our Team. Our Culture.

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide
S&GRP Sampling Fundamentals
Course #301806
Revision 3, 8/9/2012

The signatures below represent review and approval of the following training materials:

- Student Manual
- OJT Guide
- OJE

Prepared By:	Jim LaPointe	*Signature on file*	*8/9/2012*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	Barbara Briggs	*Signature on file*	*8/9/2012*
S&GRP Union NCO Rep.	Print	Signature	Date:
Approved By:	Nathan Bowles	*Signature on file*	*8/9/2012*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	Scott Conley	*Signature on file*	*8/9/2012*
S&GRP Senior Technical Lead	Print	*Signature*	Date:
Approved By:	David Capelle	*Signature on file*	*8/9/2012*
S&GRP Operations Manager	Print	*Signature*	Date:

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Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

KevinPatterson		AUG 2 6 2013
Trainee Print	Trainee Signature	Date

Change Record

Rev 0. This is the initial issue of this training and certification package. This training and certification package is based upon 301811 - NCO Routines Sampling Task List Rev. 0 dated 01/19/2009. This package will be updated as any changes or modifications are made to the qualification for Routines Sampling activities.

Change made to incorporate new Field Logging and Electronic Data Gathering (FLEDG) system. Date 5-18-2009

Added the following to S.F. Cert on 6/4/2009 to REV.2

- Add new chemical to the preservation dispenser
- Added new Rugged Reader/LT700 water level transducer
- Clarified preservation with pipette and dispenser
- Fill out RULS
- Obtain HPW with C.S. NCO permission
- Added P.O.# to RULS instruction
- Added a task for filling out COC for other organizations

10/14/09 – Rev 2a; Updated procedure reference throughout.

05/16/11 – Rev 2b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

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On-the-Job Evaluation (OJE) Instructions

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4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/Material Condition
2. Safety Responsibilities
3. Safeguards & Security Policy
4. ALARA Administration Control Levels
5. Procedure Compliance Expectations
6. Self-Checking Principles
7. Safety Communication

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
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   b) If the tools/equipment are available.
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10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
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13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
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16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

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OJE Tasks and Requirements

Conditions

- Given the necessary tools, equipment and procedures.

Standards

- Without Operator injury.
- According to the steps of the applicable procedures.

References

GRP-FS-04-G-014, Measurement of Groundwater Levels
GRP-FS-04-G-015, Bottle Preservation
GRP-FS-04-G-025: Millipore Water System
Site Specific Health and Safety Plan (HASP) Rev. 3
GRP Off-Road Driving

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Knowledge Evaluation Questions:

Q1.	Does it make a difference whether a plastic or glass container is used to collect samples?	Eval. Initials	Date
A)	The type of sample container used is of the utmost importance to maintaining the integrity of the sample. Sample containers typically are made of plastic or glass, but one material may be preferred over another for a specific analysis.	JCF	8/26/13

Q2.	Describe how sample bottles and containers are verified / certified clean.	Eval. Initials	Date
A)	*The containers must have a LOT number (aka PROD. #), which matches the LOT number on the green QA sticker, (which matches the LOT number on the Certificate of Analysis COA).*	JCF	8/26/13

Q3.	Where is the P.O. number recorded for tracking purposes?	Eval. Initials	Date
A)	*RULS*	JCF	8/26/13

Q4.	Where is the P.O. number found to record the information necessary for tracking?	Eval. Initials	Date
A)	*On the QA acceptance sticker.*	JCF	8/26/13

Q5.	What are the two primary methods used to preserve samples?	Eval. Initials	Date
A)	*Chemical additives (pH Control) and cooling (including freezing)*	JCF	8/26/13

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		Eval. Initials	Date
Q6.	What is the purpose of the Reagent Usage Log sheet?		
A)	*Provides the ability to link laboratory sample results - to the reagents used in the preservation process. When reagents are used in the pre-preservation process – verify brand name, lot number, purchase order# chemical name, concentration, and date preservatives are introduced into the process, is recorded on the Regent Usage Log Sheet.*	JO	8/26/13

		Eval. Initials	Date
Q7.	Where are the LOT#s for the new chemical located?		
A)	*On the chemical container label.*	JO	8/26/13

		Eval. Initials	Date
Q8.	Where do you document the LOT#s for the preservation chemical added to the sampling process?		
A)	*On the dispenser lid (**this is done without procedure steps and the label is not recognized in any documentation. We still want the knowledge expressed**) and on the RULS*	JO	8/26/13

		Eval. Initials	Date
Q9.	Describe how preserved sample bottles are controlled to prevent tampering.		
A)	*Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles. Normally, this is accomplished by locking the bottles in a secure location or in a sample vehicle which is locked when not attended.*	JO	8/26/13

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		Eval. Initials	Date
Q10.	Explain the purpose of the Preservative Volume Table (Attachment 2, GRP-FS-04-G-015, Bottle Preservation).	Eval. Initials	Date
A)	*The Preservative Volume Table directs the appropriate volume of preservative – for a given volume of sample container so Lab criterion is met and the DOT regulations are complied with.*	JCF	8/26/13
Q11.	Using the Preservative Volume Table, what volume of Sulfuric Acid (H_2SO_4) preservative is required for a 250mL container?	Eval. Initials	Date
A)	.125mL.	JCF	8/26/13
Q12.	Using the Preservative Volume Table, what volume of preservative of Sodium Thiosulphate ($Na_2S_2O_3$) is required for a 500mL container?	Eval. Initials	Date
A)	*0.5mL.*	JCF	8/26/13
Q13.	Explain the proper storage location and applicable storage processes for preservation chemicals.	Eval. Initials	Date
A)	*All chemicals shall be stored in the proper chemical storage unit. Unopened acids and bases shall be stored in their original containers, inside compatible chemical storage cabinets.*	JCF	8/26/13
Q14.	Explain the difference in "trace metals" Nitric Acid and Ultrex Nitric Acid.	Eval. Initials	Date
A)	*The Ultrex (when manufactured) utilizes high purity water, thus eliminates the impurities of trace metals.*	JCF	8/26/13
Q15.	Is it acceptable to substitute "trace metals" Nitric Acid with Ultrex Nitric Acid?	Eval. Initials	Date
A)	*Yes.*	JCF	8/26/13
Q16.	Is it acceptable to substitute Ultrex Nitric Acid with "trace metals" nitric acid?	Eval. Initials	Date
A)	*No*	JCF	8/26/13
Q17.	For the hood in the sample preparation area, state how flow in the hood is verified(There is two things).	Eval. Initials	Date
A)	*Check the airflow by observing the monitor, or in the absence of a monitor use a "kimwipe" taped to the open sash. The vent hood is tested monthly for hood flow by vent and balance personnel.*	JCF	8/26/13

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Q18.	Explain why flow is required in the chemical preservation hood.	Eval. Initials	Date
A)	*All work involving hazardous chemicals should be performed inside a ventilation hood to protect the individual from the hazard.*	JF	8/26/13

Q19.	Who is notified first in the event of a spill **(Health or Environment Consequences)**?	Eval. Initials	Date
A)	*911(Land Line) 373-0911 (Cell Phone)0 – Hanford Fire Department.*	JF	8/26/13

Q20.	Who is contacted when the waste containers are full?	Eval. Initials	Date
A)	*If the Satellite Accumulation Area (SAA) is full, contact your supervisor to get the SAA waste area properly prepared for further use. Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity.*	JF	8/26/13

Q21.	*When is a SAA area container considered full?*	Eval. Initials	Date
A)	*Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity. This is recommended to be no higher than the start of the shoulder of the container in order to allow room to add other chemicals for neutralization of the waste (if needed). Waste containers shall not be filled above the neckline or greater than 90% volume.*	JF	8/26/13

Q22.	What is the acceptable Meg ohm-cm value, for the HPW that is used for the cleaning process?	Eval. Initials	Date
A)	*The MYRON Conductivity meter in room 109 must read >15 Megohm-cms when filling the reservoirs with high purity water.*	JF	8/26/13

Q23.	What is the proper response, if the Milli-Q/Biocel System does not read 18.2 Mega Ohms-cm?	Eval. Initials	Date
A)	*Do not use the ultra high purity water (UHPW) and notify the operations manager or FWS.*	JF	8/26/13

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Q24.	Explain how the reference point is identified on a well.	Eval. Initials	Date
A)	*This point is generally marked by an "X," usually on the north side of the casing. When the RP cannot be readily identified because a stamped "X" is not present, assume the RP is the top of the outer casing on the north side. The information is normally provided with associated paperwork.*	JF	8/26/13

Q25.	Explain how the measuring point is identified or determined by the operator.	Eval. Initials	Date
A)	*The measuring point is usually identified on the associated paperwork. However, if not then the operator taking the measurement identifies where the measurement was taken.*	JF	8/26/13

Q26.	How is the vertical offset between the RP and MP determined?	Eval. Initials	Date
A)	*It is the measured difference in height between where the RP and MP are located.*	JF	8/26/13

Q27.	What is the power supply for the e-tape?	Eval. Initials	Date
A)	*9 volt battery*	JF	8/26/13

Q28.	How does the operator determine when the sensing probe has contacted water within the well?	Eval. Initials	Date
A)	*An audible alarm will be emitted by the e-tape.*	JF	8/26/13

Q29.	How do you know the battery and audible alarm are functioning?	Eval. Initials	Date
A)	*Pressing the test switch will provide an audible alarm if the battery and alarm are working.*	JF	8/26/13

Q30.	Does the test switch verify that the probe is working properly?	Eval. Initials	Date
A)	*No.*	JF	8/26/13

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Q31.	How is the sensitivity of the probe set?	Eval. Initials	Date
A)	*The sensitivity of the probe can be adjusted using the sensitivity knob. It also acts as the ON-OFF switch.*	JCF	8/26/13

Q32.	Explain how the standardization of the e-tape is verified to be current.	Eval. Initials	Date
A)	*A standardization sticker is placed on each instrument. In order to use the e-tape the standardization must be current.*	JCF	8/26/13

Q33.	Why is it important to avoid excessive speed while lowering the e-tape slowly into a well?	Eval. Initials	Date
A)	*Lower the e-tape slowly to prevent "bird caging", cutting, and/or damaging the e-tape. It is also important to lower the E-tape slowly to minimize how much e-tape gets contaminated by the well contents and if the water is shallow enough the sensing probe may become fouled by mud or sediment within the well which may cause the sensing probe to emit a continuous sound or no sound at all.*	JCF	8/26/13

Q34.	When removing the e-tape from the well it must be decontaminated. How much of the e-tape is required to be decontaminated?	Eval. Initials	Date
A)	*Three (3) feet beyond that which contacted the well water.*	JCF	8/26/13

Q35.	When lowering the e-tape into a well, what protective equipment should be worn and why?	Eval. Initials	Date
A)	*Leather gloves should be worn to prevent possible burn/blistering of the hands while trying to control the e-tape speed.*	JCF	8/26/13

Q36.	How is the sensing probe verified to be operational prior to using it?	Eval. Initials	Date
A)	*Turn the e-tape "ON" and place the probe in a cup of plain water. The alarm should sound if everything is functioning properly.*	JCF	8/26/13

Q37.	If the battery is dead and must be replaced, what is done with the dead battery?	Eval. Initials	Date
A)	*Place it in the battery accumulation area for future disposal.*	JCF	8/26/13

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		Eval. Initials	Date
Q38.	How accurate must the operator attempt to read the actual depth-to-water when taking measurements?	Eval. Initials	Date
A)	*Within 1 mm.*	JF	8/26/13

Q39.	When taking the two readings for the water level measurements what must the accuracy be between the two readings?	Eval. Initials	Date
A)	*According to the procedure take two consistent measurements that agree within 6 mm to assure accuracy of measurement (The 6mm is the standard from the EPA for an accuracy of two consecutive readings from the well).*	JF	8/26/13

Q40.	What measuring device is used when measuring an artesian well water level?	Eval. Initials	Date
A)	*A data device with a transducer (The Rugged Reader with the LT500).*	JF	8/26/13

Q41.	Name two ways of recording well data use at S&GRP?	Eval. Initials	Date
A)	*FLEDG and Water level measurement form.*	JF	8/26/13

Q42.	What is the minimum equipment that must be carried when driving off road?	Eval. Initials	Date
A)	*In all cases of off-road travel, a hand shovel, fire extinguisher, and communications (cell phone or radio) must always be provided in the vehicle.*	JF	8/26/13

Q43.	Who provides written instructions for off road driving yearly?	Eval. Initials	Date
A)	*Each year the Hanford Fire Department provides specific written guidance for off-road driving.*	JF	8/26/13

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Skills Check

NOTE: The candidate may use a performance level applicable for the job or situation, which may be Perform, Simulate and/or Discuss. Exempt/manager OJT candidates may only Simulate or Discuss these tasks.

Task #	Task Description	Training Method	Eval. Initials	Date
TSK 1	Use the AJHA to identify any hazards and limits associated with the bottle preservation activities.	P / S / D	JJF	8/26/13
TSK 2	Fill out a Reagent Usage Logsheet.	P / S / D		
TSK 3	Pre-preserve sample bottles using the following: ☐ Metered/pump dispenser ☐ Large manual pipette ☐ Small manual pipette Auto pipette	P / S / D		
TSK 4	Fill out COC to deliver bottles to other organizations.	P / S / D		
STD	Reference: GRP-FS-04-G-015			
TSK 5	Identify the waste containers which are to be used for each type of preservation waste.	P / S / D		
TSK 6	Prepare preserved sample bottles for other organizations.	P / S / D		
TSK 7	Obtain HPW from the cleaning station. **NOTE:** Do not obtain HPW without certified cleaning station operators concurrence.	P / S / D		
TSK 8	Acquire the appropriate Ultra High Purity Water (UHPW) necessary to accomplish sampling tasks.	P / S / D	JJF	8/26/13

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Task #	Task Description	Training Method	Eval. Initials	Date
TSK 9	Perform a Water Level Measurement Using an E-tape.	P / S / D	JF	8/26/13
TSK 10	Perform a Water Level Measurement Using the Rugged Reader with the LT500	P / S / D		
TSK 11	Complete all sections of Groundwater Water Level Measurement Form(s) in the applicable procedure.	P / S / D		
TSK 12	Input well data using (FLEDG) Field Logging and Electronic Data Gathering.	P / S / D	JF	8/26/13

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COMMENTS

Record any comments you have related to this OJE Card (i.e. details including specific questions asked, inadequate answers, termination of OJE, etc.). Refer to the task or requirement number when making your comments.

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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named below against the standards outlined in this OJT/E document. Based on the evaluation,

I RECOMMEND Kevin Patterson for CERTIFICATION.
Print Name

Chris Fulton	[signature]	8/28/13
Evaluator Print	Evaluator Signature	Date

Field Work Supervisor (FWS)

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

Nathan A. Bowles	[signature]	8/26/13
FWS Print	FWS Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

James LaPointe	[signature]	8/27/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as a Certified Operator for **Sampling Fundamentals Operations**.

David Capelle ~~Scott Conley~~ 8/26/13	D. P. Capelle	8/27/13
Operations Manager Print	Operations Manager Signature	Date

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CHPRC TRAINING COMPLETION RECORD
Form A

OSE

Records Use Only

SEP 20 2013

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STUDENT

HID/Person ID	Last Name	First Name	MI
H0017276	Patterson	Kevin	C

TRAINING

Course No.	Date Completed	CACN	Company
301810	9-12-13	N-A	CHPRC

Course Title Multi-Media Sampling

TRAINING STATUS CODE:
(If blank, default is Complete)

- ◉ Complete
- ○ Fail
- ○ Incomplete

Test Number ______

Checklist Number ______

Score(s) ______

COMMENTS:

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

[signature] (Employee Signature) — 9/12/13 (Date)

~~Tim Bender~~ Cin D Hayes (Authenticator Print Name), Cin D Hayes (Authenticator Signature) — 9/19/13 (Date) — R4-03 (MSIN)

BE Briggs (Instructor Print Name), Be Briggs (Instructor Signature) — 9/12/13 (Date) — (MSIN)

ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6005-132 (REV 0)

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One Team. One Culture.

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide

Multi-Media Sampling

Course #301810

Revision 0b

5/16/2011

The signatures below represent review and approval of the following training materials:

- OJT Guide
- OJE

Prepared By: S&GRP Training Representative	Tim Bender (Print)	Signature on File (Signature)	4/29/2009 (Date:)
Reviewed By: S&GRP NCO	Danniel P. Connolly (Print)	Signature on File (Signature)	4/30/2009 (Date:)
Approved By: S&GRP Field Work Supervisor	Jim Hogan (Print)	Signature on File (Signature)	4/30/2009 (Date:)
Approved By: S&GRP Operations Manager	Scott Conley (Print)	Signature on File (Signature)	4/30/2009 (Date:)
Approved By: S&GRP Training Lead	Tim Bender (Print)	Signature on File (Signature)	4/30/2009 (Date:)

Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

Trainee Print	Trainee Signature	Date
Kevin Patterson	[signature]	9/12/13

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Change Record

This is revision 0. This section will be updated as any changes or modifications are made to the qualification for Fundamental Sampling activities.

10/14/09 – Rev 0a; Updated procedure reference throughout.

05/16/11 – Rev 0b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

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On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/
2. Procedure Compliance Expectations
3. Safety Communication//Two way communication4.
4 ALARA

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9 **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

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OJE Tasks and Requirements

Conditions
- Given the necessary tools, equipment and procedures.

Standards
- Without Operator injury.
- According to the steps of the applicable procedures.

References
- GRP-FS-04-G-005, Control Room Monitoring Instruments
- GRP-FS-04-G-013, Laboratory Cleaning of Sampling Equipment
- GRP-FS-04-G-015, Bottle Preservation
- GRP-FS-04-G-016, Chain of Custody/Sample Analysis Request
- GRP-FS-04-G-022, Biotic Sampling
- GRP-FS-04-G-023, Container Sampling
- GRP-FS-04-G-024, Collecting PCB Wipe Samples
- GRP-FS-04-G-029, Non-VOC Soil & Sediment Sample
- GRP-FS-04-G-030, VOC Soil & Sediment Sample
- GRP-FS-04-G-033, Routine and Non-Routine Soil Gas Sampling
- GRP-FS-04-G-038, pH Screening in Soil & Waste
- GRP-FS-04-G-043, SUMMA Canister Sampling

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Task Evaluations:

Task#	Requirement:	Date	Eval. Initials
1.	Review an AJHA	9/12/13	bb
Standard:			

http://ajha.rl.gov/ajhaweb/secure/ReportsOnly/RO_Menu/RO_Login.cfm

Task#	Requirement:	Date	Eval. Initials
2.	**Log Photo documentation into logbook**	9/12/13	bb
Standard:	PRC-PRO-IRM-10863		

SIRS is a data base used by the Multi-Media group to track and produce the necessary documentation for identifying the samples taken for a specific sampling event.

Task#	Requirement:	Date	Eval. Initials
3.	**SIRS Generate COC**	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
4.	**SIRS Generate SAF**	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
5.	**SIRS Enter information into the logbook management**	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
6.	**SIRS Enter information into shipping management**	9/12/13	bb
Standard:			

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Task#	Requirement:	Date	Eval. Initials
7.	SIRS Obtain Reports	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
8.	SIRS use system data management	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
9.	SIRS Generate Sample I.D.	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
10.	SIRS Generate analysis information	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
11.	SIRS Generate preservation type for sample container	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
12.	SIRS Generate Hold Times	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
13.	SIRS Type of Matrix	9/12/13	bb
Standard:			

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Task#	Requirement:	Date	Eval. Initials
14.	SIRS Identify bottle size and type	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
15.	SIRS Identify Laboratory	9/12/13	bb
Standard:			

For anyone with a GPS receiver, the system will provide location and time. GPS provides accurate location and time information for an unlimited number of people in all weather, day and night, anywhere in the world.

Task#	Requirement:	Date	Eval. Initials
16.	Use a GPS to identify sample location	9/12/13	bb
Standard:			

Task#	Requirement:	Date	Eval. Initials
17.	Collect a Simple random sample	9/12/13	bb
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
18.	Collect a Stratified random sample	9/12/13	bb
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
19.	Collect a Cluster (Area) Random Sampling	9/12/13	bb
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
20.	Collect a multi incremental sample	9/12/13	bb
Standard:	Ref: RCRA Sampling Technical Guide		

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Task#	Requirement: Biotia Sampling	Date	Eval. Initials
21.	**Sample Vegetation**	9/12/13	bb
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Biotia Sampling	Date	Eval. Initials
22.	**Animal Sampling (Insects Reptiles and small mammals)**	9/12/13	bb
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Container Sampling	Date	Eval. Initials
23.	**Soil/Sediment Sampling**	9/12/13	bb
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
24.	**Liquid/Sediment/Sludge Sampling**	9/12/13	bb
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
25.	**Representative Sampling of Miscellaneous Solid Materials**	9/12/13	bb
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
26.	**Stratified Soil/Sediment Sampling**	9/12/13	bb
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
27.	**Homogeneous/heterogeneous/Compositing**	9/12/13	bb
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
28.	**Wiping/Smears(PBC)**	9/12/13	bb
Standard:	GRP-FS-04-G-024		

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Task#	**Requirement:** Sampling Approach	Date	Eval. Initials
29.	**Investigative Sampling**	9/12/13	DD
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	**Requirement:** Sampling Approach	Date	Eval. Initials
30.	**Destructive/Non-Destructive Sampling**	9/12/13	DD
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	**Requirement:** Sampling Approach	Date	Eval. Initials
31.	**Biased-Unbiased Sampling**	9/12/13	DD
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	**Requirement:** Sampling Approach	Date	Eval. Initials
32.	**Scraping Sampling**	9/12/13	DD
Standard:	Ref: RCRA Sampling Technical Guide		

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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named above against the standards outlined in this OJE document. Based on the evaluation,

I recommend Kevin Patterson for Multi-Media Sampling certification.
(Print Name)

BE Briggs	Be Briggs	9/12/13
Evaluator Name [Print]	Evaluator Signature	Date

Field Work Supervisor

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

P. Hinosok		9/16/13
Field Work Supervisor (Print)	Training Representative Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

Cindi Hayes	Cindi Hayes	9/19/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as Certified for Multi-Media Sampling certification.
certification.

Dave Capelle	D. P. Capelle	9/18/13
Operations Manager Print	Operations Manager Signature	Date

Candidate Name:	Kevin Patterson	HID#:	H0017276	Date Issued:	SEP 13 2013	Initial Cert.	Re-Cert.	Page #
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The information contained in this report is from the Mission Support Alliance Training Records office [redacted] If you have questions or need clarification on the information below, please contact the Training Records office by calling either 509-376-8671 or 509-372-2407.

2/21/2014 [redacted] 1

Name: Wall, Lesly D
HID: 0041852

Course#:	Course Title	LM_ENRLMT_DESCR	LM_ACT_CD	Completion
301805	S&GRP SAMPLING FUNDAMENTALS CLASSROOM	TRI_REFERENCE_HNF =	301805:0014	01/11/2010
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE	TRI_REFERENCE_HNF =	301806:0029	10/22/2009
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10011	10/20/2011
301806	S&GRP SAMPLING FUNDAMENTALS OJT/OJE		301806:10030	10/03/2013
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0012	04/27/2005
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD	TRI_REFERENCE_HNF =	301810:0022	06/06/2007
301810	MULTI-MEDIA SAMPLING QUALIFICATION CARD		301810:10008	07/02/2013

COURSE COMPLETION ROSTER

Records Use Only
MAR 24 2010
0014
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Course No.	Course Title	Date Completed
301805	S&GRP SAMPLING FUNDAMENTALS - CLASSROOM	1/11/10
Session No. 0014 *Records Use Only*	**Location** MO413/200E	**Beginning Date/Time** 7:00 am 1/11/10

NOTE: IN ORDER TO OBTAIN CREDIT FOR CLASS, FILL OUT FORM ACCURATELY:
1. PRINT NAME IN FORMAT LAST, FIRST, MI (UNLESS NAME IS ALREADY PROVIDED).
2. SIGN NAME IN PERMANENT INK AND PROVIDE REQUESTED INFORMATION.
3. IF YOU DO NOT HAVE A HID OR PAYROLL NUMBER, CONTACT YOUR INSTRUCTOR TO COMPLETE A TRAINING COMPLETION RECORD, FORM A-6001-539.

Billing Info
☐ BILLABLE CLASS
☐ NON-BILLABLE CLASS

	Hanford ID (HID) or Person ID	Print Name (Last, First, MI)	Signature	Company	CACN (Charge Code)	Billing Code *See Billing Codes Below
1	0041852	Lesly Wall	Lesly D. Wall	CHPRC		
2						
3						
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5						
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16						

Instructor's Name (Printed/Signature)	Date/MSIN	Authenticator's Name (Printed/Signature)	Date/MSIN
Pablo Cano [signature]	1/11/10 S0-11	Tim Bender Tim Bender	3/22/10 B3-19

COMMENTS:

UNUSED BLOCKS ON COMPLETED FORM NEED NOT BE MARKED N/A OR LINED OUT.

*BILLING CODES: (CB) Complete Bill, (CN) Complete No-Bill, (FB) Fail Bill, (IB) Incomplete Bill, (IN) Incomplete No-Bill, (NB) No Show Bill, (XX) Cancel. IF BLANK, WILL DEFAULT TO COMPLETE BILL (CB).

DISTRIBUTION: ORIGINAL TO TRAINING RECORDS, G6-60 [redacted] A-6001-541 (REV 2)

OJE

TRAINING COMPLETION RECORD
Form A

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STUDENT

HID/Person ID	Last Name	First Name	MI
H0041852	Wall	Lesly	D

TRAINING

Course No.	Date Completed	CACN	Company
301806	10/3/13		CHPRC

Course Title Sampling Fundamentals

TRAINING STATUS CODE:
(If blank, default is Complete)

- (●) Complete
- ( ) Fail
- ( ) Incomplete

Test Number N/A

Checklist Number

Score(s)

COMMENTS:

OJE ATTACHED

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

Lesly Wall (Employee Signature) — 10/2/13 (Date)

~~TIM C BENDER~~ 10/3/13 James LaPointe (Authenticator Print Name) — (Authenticator Signature) — 10/3/13 (Date) — R3-21 ~~R3-19~~ 10/3/13 (MSIN)

Chris Fulton (Instructor Print Name) — (Instructor Signature) — 10/2/13 (Date) — (MSIN)

One Team. One Culture.

CH2MHILL
Plateau Remediation Company

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Soil and Groundwater Remediation Project

OJE Certification Guide
S&GRP Sampling Fundamentals

Course #301806

Revision 3, 8/9/2012

The signatures below represent review and approval of the following training materials:

- Student Manual
- OJT Guide
- OJE

Prepared By:	Jim LaPointe	*Signature on file*	*8/9/2012*
S&GRP Training Representative	Print	*Signature*	Date:
Reviewed By:	Barbara Briggs	*Signature on file*	*8/9/2012*
S&GRP Union NCO Rep.	Print	Signature	Date:
Approved By:	Nathan Bowles	*Signature on file*	*8/9/2012*
S&GRP Field Work Supervisor	Print	*Signature*	Date:
Approved By:	Scott Conley	*Signature on file*	*8/9/2012*
S&GRP Senior Technical Lead	Print	*Signature*	Date:
Approved By:	David Capelle	*Signature on file*	*8/9/2012*
S&GRP Operations Manager	Print	*Signature*	Date:

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Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

LeslyWall		
Trainee Print	Trainee Signature	Date

Change Record

Rev 0. This is the initial issue of this training and certification package. This training and certification package is based upon 301811 - NCO Routines Sampling Task List Rev. 0 dated 01/19/2009. This package will be updated as any changes or modifications are made to the qualification for Routines Sampling activities.

Change made to incorporate new Field Logging and Electronic Data Gathering (FLEDG) system. Date 5-18-2009

Added the following to S.F. Cert on 6/4/2009 to REV.2

- Add new chemical to the preservation dispenser
- Added new Rugged Reader/LT700 water level transducer
- Clarified preservation with pipette and dispenser
- Fill out RULS
- Obtain HPW with C.S. NCO permission
- Added P.O.# to RULS instruction
- Added a task for filling out COC for other organizations

10/14/09 – Rev 2a; Updated procedure reference throughout.

05/16/11 – Rev 2b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

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On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/Material Condition
2. Safety Responsibilities
3. Safeguards & Security Policy
4. ALARA Administration Control Levels
5. Procedure Compliance Expectations
6. Self-Checking Principles
7. Safety Communication

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but <u>DO NOT PROMPT</u> unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

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OJE Tasks and Requirements

Conditions

- Given the necessary tools, equipment and procedures.

Standards

- Without Operator injury.
- According to the steps of the applicable procedures.

References

GRP-FS-04-G-014, Measurement of Groundwater Levels
GRP-FS-04-G-015, Bottle Preservation
GRP-FS-04-G-025: Millipore Water System
Site Specific Health and Safety Plan (HASP) Rev. 3
GRP Off-Road Driving

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Knowledge Evaluation Questions:

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Q1.	Does it make a difference whether a plastic or glass container is used to collect samples?	Eval. Initials	Date
A)	The type of sample container used is of the utmost importance to maintaining the integrity of the sample. Sample containers typically are made of plastic or glass, but one material may be preferred over another for a specific analysis.	JCF	10/2/13

Q2.	Describe how sample bottles and containers are verified / certified clean.	Eval. Initials	Date
A)	*The containers must have a LOT number (aka PROD. #), which matches the LOT number on the green QA sticker, (which matches the LOT number on the Certificate of Analysis COA).*	JCF	10/2/13

Q3.	Where is the P.O. number recorded for tracking purposes?	Eval. Initials	Date
A)	*RULS*	JCF	10/2/13

Q4.	Where is the P.O. number found to record the information necessary for tracking?	Eval. Initials	Date
A)	*On the QA acceptance sticker.*	JCF	10/2/13

Q5.	What are the two primary methods used to preserve samples?	Eval. Initials	Date
A)	*Chemical additives (pH Control) and cooling (including freezing)*	JCF	10/2/13

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		Eval. Initials	Date
Q6.	What is the purpose of the Reagent Usage Log sheet?	Eval. Initials	Date
A)	*Provides the ability to link laboratory sample results - to the reagents used in the preservation process. When reagents are used in the pre-preservation process – verify brand name, lot number, purchase order# chemical name, concentration, and date preservatives are introduced into the process, is recorded on the Regent Usage Log Sheet.*	JF	10/2/13

Q7.	Where are the LOT#s for the new chemical located?	Eval. Initials	Date
A)	*On the chemical container label.*	JF	10/2/13

Q8.	Where do you document the LOT#s for the preservation chemical added to the sampling process?	Eval. Initials	Date
A)	*On the dispenser lid (**this is done without procedure steps and the label is not recognized in any documentation. We still want the knowledge expressed**) and on the RULS*	JF	10/2/13

Q9.	Describe how preserved sample bottles are controlled to prevent tampering.	Eval. Initials	Date
A)	*Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles. Normally, this is accomplished by locking the bottles in a secure location or in a sample vehicle which is locked when not attended.*	JF	10/2/13

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		Eval. Initials	Date
Q10.	Explain the purpose of the Preservative Volume Table (Attachment 2, GRP-FS-04-G-015, Bottle Preservation).		
A)	*The Preservative Volume Table directs the appropriate volume of preservative – for a given volume of sample container so Lab criterion is met and the DOT regulations are complied with.*	JCF	10/2/13

		Eval. Initials	Date
Q11.	Using the Preservative Volume Table, what volume of Sulfuric Acid (H_2SO_4) preservative is required for a 250mL container?		
A)	.125mL.	JCF	10/2/13

		Eval. Initials	Date
Q12.	Using the Preservative Volume Table, what volume of preservative of Sodium Thiosulphate ($Na_2S_2O_3$) is required for a 500mL container?		
A)	*0.5mL.*	JCF	10/2/13

		Eval. Initials	Date
Q13.	Explain the proper storage location and applicable storage processes for preservation chemicals.		
A)	*All chemicals shall be stored in the proper chemical storage unit. Unopened acids and bases shall be stored in their original containers, inside compatible chemical storage cabinets.*	JCF	10/2/13

		Eval. Initials	Date
Q14.	Explain the difference in "trace metals" Nitric Acid and Ultrex Nitric Acid.		
A)	*The Ultrex (when manufactured) utilizes high purity water, thus eliminates the impurities of trace metals.*	JCF	10/2/13

		Eval. Initials	Date
Q15.	Is it acceptable to substitute "trace metals" Nitric Acid with Ultrex Nitric Acid?		
A)	*Yes.*	JCF	10/2/13

		Eval. Initials	Date
Q16.	Is it acceptable to substitute Ultrex Nitric Acid with "trace metals" nitric acid?		
A)	*No*	JCF	10/2/13

		Eval. Initials	Date
Q17.	For the hood in the sample preparation area, state how flow in the hood is verified(There is two things).		
A)	*Check the airflow by observing the monitor, or in the absence of a monitor use a "kimwipe" taped to the open sash. The vent hood is tested monthly for hood flow by vent and balance personnel.*	JCF	10/2/13

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Q18.	Explain why flow is required in the chemical preservation hood.	Eval. Initials	Date
A)	*All work involving hazardous chemicals should be performed inside a ventilation hood to protect the individual from the hazard.*	JF	10/2/13

Q19.	Who is notified first in the event of a spill **(Health or Environment Consequences)**?	Eval. Initials	Date
A)	*911(Land Line) 373-0911 (Cell Phone)0 – Hanford Fire Department.*	JF	10/2/13

Q20.	Who is contacted when the waste containers are full?	Eval. Initials	Date
A)	*If the Satellite Accumulation Area (SAA) is full, contact your supervisor to get the SAA waste area properly prepared for further use. Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity.*	JF	10/2/13

Q21.	*When is a SAA area container considered full?*	Eval. Initials	Date
A)	*Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity. This is recommended to be no higher than the start of the shoulder of the container in order to allow room to add other chemicals for neutralization of the waste (if needed). Waste containers shall not be filled above the neckline or greater than 90% volume.*	JF	10/2/13

Q22.	What is the acceptable Meg ohm-cm value, for the HPW that is used for the cleaning process?	Eval. Initials	Date
A)	*The MYRON Conductivity meter in room 109 must read >15 Megohm-cms when filling the reservoirs with high purity water.*	JF	10/2/13

Q23.	What is the proper response, if the Milli-Q/Biocel System does not read 18.2 Mega Ohms-cm?	Eval. Initials	Date
A)	*Do not use the ultra high purity water (UHPW) and notify the operations manager or FWS.*	JF	10/2/13

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Q24.	Explain how the reference point is identified on a well.	Eval. Initials	Date
A)	*This point is generally marked by an "X," usually on the north side of the casing. When the RP cannot be readily identified because a stamped "X" is not present, assume the RP is the top of the outer casing on the north side. The information is normally provided with associated paperwork.*	JF	10/2/13

Q25.	Explain how the measuring point is identified or determined by the operator.	Eval. Initials	Date
A)	*The measuring point is usually identified on the associated paperwork. However, if not then the operator taking the measurement identifies where the measurement was taken.*	JF	10/2/13

Q26.	How is the vertical offset between the RP and MP determined?	Eval. Initials	Date
A)	*It is the measured difference in height between where the RP and MP are located.*	JF	10/2/13

Q27.	What is the power supply for the e-tape?	Eval. Initials	Date
A)	*9 volt battery*	JF	10/2/13

Q28.	How does the operator determine when the sensing probe has contacted water within the well?	Eval. Initials	Date
A)	*An audible alarm will be emitted by the e-tape.*	JF	10/2/13

Q29.	How do you know the battery and audible alarm are functioning?	Eval. Initials	Date
A)	*Pressing the test switch will provide an audible alarm if the battery and alarm are working.*	JF	10/2/13

Q30.	Does the test switch verify that the probe is working properly?	Eval. Initials	Date
A)	*No.*	JF	10/2/13

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Q31.	How is the sensitivity of the probe set?	Eval. Initials	Date
A)	*The sensitivity of the probe can be adjusted using the sensitivity knob. It also acts as the ON-OFF switch.*	JF	10/2/13

Q32.	Explain how the standardization of the e-tape is verified to be current.	Eval. Initials	Date
A)	*A standardization sticker is placed on each instrument. In order to use the e-tape the standardization must be current.*	JF	10/2/13

Q33.	Why is it important to avoid excessive speed while lowering the e-tape slowly into a well?	Eval. Initials	Date
A)	*Lower the e-tape slowly to prevent "bird caging", cutting, and/or damaging the e-tape. It is also important to lower the E-tape slowly to minimize how much e-tape gets contaminated by the well contents and if the water is shallow enough the sensing probe may become fouled by mud or sediment within the well which may cause the sensing probe to emit a continuous sound or no sound at all.*	JF	10/2/13

Q34.	When removing the e-tape from the well it must be decontaminated. How much of the e-tape is required to be decontaminated?	Eval. Initials	Date
A)	*Three (3) feet beyond that which contacted the well water.*	JF	10/2/13

Q35.	When lowering the e-tape into a well, what protective equipment should be worn and why?	Eval. Initials	Date
A)	*Leather gloves should be worn to prevent possible burn/blistering of the hands while trying to control the e-tape speed.*	JF	10/2/13

Q36.	How is the sensing probe verified to be operational prior to using it?	Eval. Initials	Date
A)	*Turn the e-tape "ON" and place the probe in a cup of plain water. The alarm should sound if everything is functioning properly.*	JF	10/2/13

Q37.	If the battery is dead and must be replaced, what is done with the dead battery?	Eval. Initials	Date
A)	*Place it in the battery accumulation area for future disposal.*	JF	10/2/13

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Q38.	How accurate must the operator attempt to read the actual depth-to-water when taking measurements?	Eval. Initials	Date
A)	*Within 1 mm.*	JF	10/2/13

Q39.	When taking the two readings for the water level measurements what must the accuracy be between the two readings?	Eval. Initials	Date
A)	*According to the procedure take two consistent measurements that agree within 6 mm to assure accuracy of measurement (The 6mm is the standard from the EPA for an accuracy of two consecutive readings from the well).*	10/2/13 JF	10/2/13

Q40.	What measuring device is used when measuring an artesian well water level?	Eval. Initials	Date
A)	*A data device with a transducer (The Rugged Reader with the LT500).*	JF	10/2/13

Q41.	Name two ways of recording well data use at S&GRP?	Eval. Initials	Date
A)	*FLEDG and Water level measurement form.*	JF	10/2/13

Q42.	What is the minimum equipment that must be carried when driving off road?	Eval. Initials	Date
A)	*In all cases of off-road travel, a hand shovel, fire extinguisher, and communications (cell phone or radio) must always be provided in the vehicle.*	JF	10/2/13

Q43.	Who provides written instructions for off road driving yearly?	Eval. Initials	Date
A)	*Each year the Hanford Fire Department provides specific written guidance for off-road driving.*	JF	10/2/13

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Skills Check

NOTE: The candidate may use a performance level applicable for the job or situation, which may be Perform, Simulate and/or Discuss. Exempt/manager OJT candidates may only Simulate or Discuss these tasks.

Task #	Task Description	Training Method	Eval. Initials	Date
TSK 1	Use the AJHA to identify any hazards and limits associated with the bottle preservation activities.	P / S / D	JF	10/2/13
TSK 2	Fill out a Reagent Usage Logsheet.	P / S / D	JF	10/2/13
TSK 3	Pre-preserve sample bottles using the following: ☐ Metered/pump dispenser ☐ Large manual pipette ☐ Small manual pipette Auto pipette	P / S / D	JF	10/2/13
TSK 4	Fill out COC to deliver bottles to other organizations.	P / S / D	JF	10/2/13
STD	Reference: GRP-FS-04-G-015		JF	10/2/13
TSK 5	Identify the waste containers which are to be used for each type of preservation waste.	P / S / D	JF	10/2/13
TSK 6	Prepare preserved sample bottles for other organizations.	P / S / D	JF	10/2/13
TSK 7	Obtain HPW from the cleaning station. **NOTE:** Do not obtain HPW without certified cleaning station operators concurrence.	P / S / D	JF	10/2/13
TSK 8	Acquire the appropriate Ultra High Purity Water (UHPW) necessary to accomplish sampling tasks.	P / S / D	JF	10/2/13

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Task #	Task Description	Training Method	Eval. Initials	Date
TSK 9	Perform a Water Level Measurement Using an E-tape.	P / S / D	JF	10/4/13
TSK 10	Perform a Water Level Measurement Using the Rugged Reader with the LT500	P / S / D	JF	10/2/13
TSK 11	Complete all sections of Groundwater Water Level Measurement Form(s) in the applicable procedure.	P / S / D	JF	10/2/13
TSK 12	Input well data using (FLEDG) Field Logging and Electronic Data Gathering.	P / S / D	JF	10/4/13

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COMMENTS

Record any comments you have related to this OJE Card (i.e. details including specific questions asked, inadequate answers, termination of OJE, etc.). Refer to the task or requirement number when making your comments.

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Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named below against the standards outlined in this OJT/E document. Based on the evaluation,

I RECOMMEND Lesly Wall for CERTIFICATION.

Print Name

Chris Fulton	[signature]	10/2/13
Evaluator Print	Evaluator Signature	Date

Field Work Supervisor (FWS)

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

N. Bowles	[signature]	10/2/13
FWS Print	FWS Signature	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

James LaPointe	[signature]	10/3/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as a Certified Operator for **Sampling Fundamentals Operations**.

~~Scott Conley~~ D.P. Capelle	D.P. Capelle	10/3/13
Operations Manager Print	Operations Manager Signature	Date

Candidate Name:	Lesly Wall	HID#:	H0041852	Date Issued:	9/30/13	Initial Cert.	Re-Cert.	Page #
					Place a checkmark for Initial Certification or Re-Certification	○	◉	15 of 15

OJT

CHPRC TRAINING COMPLETION RECORD
Form A

Records Use Only

RECEIVED
JUL 17 2013
10008

STUDENT

HID/Person ID	Last Name	First Name	MI
H0041852	Wall	Lesly	

TRAINING

Course No.	Date Completed	CACN	Company
301810	7/2/13		CHPRC

Course Title Multi-Media Sampling

TRAINING STATUS CODE:
(If blank, default is Complete)

- (●) Complete
- ( ) Fail
- ( ) Incomplete

Test Number
Checklist Number
Score(s)

COMMENTS:

SIGNATURES/DATES

The test and/or training material was reviewed and discussed with the employee.

L. D. Wall (Employee Signature)		7/2/13 (Date)	
~~Tim Bender~~ JB 7/10/13 James LaPointe (Authenticator Print Name)	[signature] (Authenticator Signature)	7/10/13 (Date)	L3-21 (MSIN)
F. M. Hall (Instructor Print Name)	[signature] (Instructor Signature)	7-2-13 (Date)	(MSIN)

10008

One Team. One Culture.

CH2MHILL
Plateau Remediation Company

Soil and Groundwater Remediation Project

OJE Certification Guide
Multi-Media Sampling
Course #301810
Revision 0b
5/16/2011

The signatures below represent review and approval of the following training materials:
- OJT Guide
- OJE

Prepared By: S&GRP Training Representative	Tim Bender Print	*Signature on File* *Signature*	4/29/2009 Date:
Reviewed By: S&GRP NCO	Danniel P. Connolly Print	*Signature on File* *Signature*	4/30/2009 Date:
Approved By: S&GRP Field Work Supervisor	Jim Hogan Print	*Signature on File* *Signature*	4/30/2009 Date:
Approved By: S&GRP Operations Manager	Scott Conley Print	*Signature on File* *Signature*	4/30/2009 Date:
Approved By: S&GRP Training Lead	Tim Bender Print	*Signature on File* *Signature*	4/30/2009 Date:

Trainee

My signature below indicates I have been trained and properly prepared to be evaluated.

Lesly Wall	Lesly D Wall	7/2/13
Trainee Print	Trainee Signature	Date

Candidate Name:	Lesly Wall	HID#:	H0041852	Date Issued:	7/2/13	Initial Cert.	Re-Cert.	Page #
	Place a checkmark for Initial Certification or Re-Certification					✓		1 of 10

GW 7/2/13

Change Record

This is revision 0. This section will be updated as any changes or modifications are made to the qualification for Fundamental Sampling activities.

10/14/09 – Rev 0a; Updated procedure reference throughout.

05/16/11 – Rev 0b; Added columns for evaluator initials and date in the tables for Knowledge Evaluation Questions and Task Evaluations.

10008

On-the-Job Evaluation (OJE) Instructions

General Guidelines:

1. On-the-Job Training (OJT) and On-the-Job Evaluation (OJE) are separate processes and are not allowed to be conducted concurrently.
2. A qualified OJE Evaluator (completion of course 000397) may evaluate only ONE person at any one time.
3. When practical, OJE should be conducted by an OJE Evaluator who was not the OJT Trainer for the trainee on this task.
4. The OJE Evaluator is responsible for correct performance of activities and shall immediately STOP or redirect the trainee if personnel or project safety are jeopardized.

Work Practices (Observe and (evaluate as appropriate) the following during OJE):

1. Housekeeping/
2. Procedure Compliance Expectations
3. Safety Communication//Two way communication4.
4. ALARA

Evaluator Responsibilities:

1. ENSURE you are qualified to evaluate the task (you are a certified operator and qualified OJE evaluator).
2. ENSURE a safe environment exists; if any event makes this evaluation unsafe or jeopardizes the effectiveness of the evaluation, the evaluator shall reschedule the evaluation.
3. UTILIZE THE OJT GUIDE to ensure adequate/acceptable responses by the trainee during OJE process.
4. **IF** more than one evaluator performs the OJE, **ENSURE** specific details of the evaluator exchange are documented in the "Comments" section of the Certification Card.
5. Review prerequisites, precautions, conduct of operations, limitations, and sequence of actions to determine:
   a) If the procedure being used is the correct revision.
   b) If the tools/equipment are available.
   c) If the project status allows evaluation of the specified performance level (e.g., P, S [D is allowable for recertification]) of the task.
   d) If performance levels CANNOT be performed at the specified performance level, line management approval MUST be obtained and the deviation documented in the comment section.
6. Obtain line manager authorization if the task may affect project operations or change the project conditions.
7. **EXPLAIN** the OJE process including: trainee's and evaluator's roles; performance standards.
8. **STATE** initial conditions and initiating cue.
9. **VERIFY** appropriate trainee actions.
10. **MONITOR** and **EVALUATE** the trainee's work practices.
11. **PROVIDE** response cues, but DO NOT PROMPT unless direct supervision (this may be the second person on the task) is normal for this task and your role will not interfere with ability to evaluate.
12. **INTERVENE/STOP** the evaluation under the following circumstances: An actual emergency occurs; trainee's actions may result in injury, damage to equipment, or jeopardizing operation; trainee states he/she cannot complete task; trainee demonstrates inadequate knowledge or other off normal situation determined by the evaluator. If the evaluation is stopped, NOTIFY trainee that evaluation is over.
13. **DETERMINE** if all performance standards are met.
14. **DOCUMENT** evaluation results and **SOLICIT** comments/feedback from trainee.
    - The specific details of each question answered inadequately, including the trainee's response, shall be documented in the comments section.
15. **ANNOTATE** deficiencies and communicate them to trainee.
16. **CRITIQUE** trainee's performance.

Trainee Responsibilities:

1. **VERIFY** current revision of procedure.
2. **REVIEW** prerequisites, precautions, conduct of operators, limitations, and action sequence before performing OJE.
3. **VERBALIZE** all actions before initiating them.
4. **DESCRIBE** expected responses and how/where verified.
5. **REQUEST** indication/parameter cues from evaluator, if needed.
6. Review and understand the OJT guide in its entirety.

Candidate Name:	Lesly Wall	HID#:	H0041852	Date Issued:	7/2/13	Initial Cert.	Re-Cert.	Page #
				Place a checkmark for Initial Certification or Re-Certification		●	○	3 of 10

OJE Tasks and Requirements

Conditions

- Given the necessary tools, equipment and procedures.

Standards

- Without Operator injury.
- According to the steps of the applicable procedures.

References

- GRP-FS-04-G-005, Control Room Monitoring Instruments
- GRP-FS-04-G-013, Laboratory Cleaning of Sampling Equipment
- GRP-FS-04-G-015, Bottle Preservation
- GRP-FS-04-G-016, Chain of Custody/Sample Analysis Request
- GRP-FS-04-G-022, Biotic Sampling
- GRP-FS-04-G-023, Container Sampling
- GRP-FS-04-G-024, Collecting PCB Wipe Samples
- GRP-FS-04-G-029, Non-VOC Soil & Sediment Sample
- GRP-FS-04-G-030, VOC Soil & Sediment Sample
- GRP-FS-04-G-033, Routine and Non-Routine Soil Gas Sampling
- GRP-FS-04-G-038, pH Screening in Soil & Waste
- GRP-FS-04-G-043, SUMMA Canister Sampling

Candidate Name:	Lesly Wall	HID#:	H0041852	Date Issued:	7/2/13	Initial Cert.	Re-Cert.	Page #
					Place a checkmark for Initial Certification or Re-Certification	⦿	○	4 of 10

Task Evaluations:

Task#	Requirement:	Date	Eval. Initials
1.	Review an AJHA	7/2/13	[signature]
Standard:			

http://ajha.rl.gov/ajhaweb/secure/ReportsOnly/RO_Menu/RO_Login.cfm

Task#	Requirement:	Date	Eval. Initials
2.	Log Photo documentation into logbook	7/2/13	[signature]
Standard:	PRC-PRO-IRM-10863		

SIRS is a data base used by the Multi-Media group to track and produce the necessary documentation for identifying the samples taken for a specific sampling event.

Task#	Requirement:	Date	Eval. Initials
3.	SIRS Generate COC	7/2/13	[signature]
Standard:			

Task#	Requirement:	Date	Eval. Initials
4.	SIRS Generate SAF	7/2/13	[signature]
Standard:			

Task#	Requirement:	Date	Eval. Initials
5.	SIRS Enter information into the logbook management	7/2/13	[signature]
Standard:			

Task#	Requirement:	Date	Eval. Initials
6.	SIRS Enter information into shipping management	7/2/13	[signature]
Standard:			

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Lesly Wall	H0041852	7/2/13	◉	○	5 of 10

Place a checkmark for Initial Certification or Re-Certification

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Task#	Requirement:	Date	Eval. Initials
7.	**SIRS Obtain Reports**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
8.	**SIRS use system data management**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
9.	**SIRS Generate Sample I.D.**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
10.	**SIRS Generate analysis information**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
11.	**SIRS Generate preservation type for sample container**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
12.	**SIRS Generate Hold Times**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
13.	**SIRS Type of Matrix**	7/2/13	[initials]
Standard:			

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Lesly Wall	H0041852	7/2/13			
Place a checkmark for Initial Certification or Re-Certification			◉	○	6 of 10

Task#	Requirement:	Date	Eval. Initials
14.	**SIRS Identify bottle size and type**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
15.	**SIRS Identify Laboratory**	7/2/13	[initials]
Standard:			

For anyone with a GPS receiver, the system will provide location and time. GPS provides accurate location and time information for an unlimited number of people in all weather, day and night, anywhere in the world.

Task#	Requirement:	Date	Eval. Initials
16.	**Use a GPS to identify sample location**	7/2/13	[initials]
Standard:			

Task#	Requirement:	Date	Eval. Initials
17.	**Collect a Simple random sample**	7/2/13	[initials]
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
18.	**Collect a Stratified random sample**	7/2/13	[initials]
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
19.	**Collect a Cluster (Area) Random Sampling**	7/2/13	[initials]
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement:	Date	Eval. Initials
20.	**Collect a multi incremental sample**	7/2/13	[initials]
Standard:	Ref: RCRA Sampling Technical Guide		

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Lesly Wall	H0041852	7/2/13	◉	○	7 of 10

Place a checkmark for Initial Certification or Re-Certification

Task#	Requirement: Biotia Sampling	Date	Eval. Initials
21.	**Sample Vegetation**	7/2/13	[signature]
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Biotia Sampling	Date	Eval. Initials
22.	**Animal Sampling (Insects Reptiles and small mammals)**	7/2/13	[signature]
Standard:	GRP-FS-04-G-022		

Task#	Requirement: Container Sampling	Date	Eval. Initials
23.	**Soil/Sediment Sampling**	7/2/13	[signature]
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
24.	**Liquid/Sediment/Sludge Sampling**	7/2/13	[signature]
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
25.	**Representative Sampling of Miscellaneous Solid Materials**	7/2/13	[signature]
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Container Sampling	Date	Eval. Initials
26.	**Stratified Soil/Sediment Sampling**	7/2/13	[signature]
Standard:	GRP-FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
27.	**Homogeneous/heterogeneous/Compositing**	7/2/13	[signature]
Standard:	GRP--FS-04-G-023		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
28.	**Wiping/Smears(PBC)**	7/2/13	[signature]
Standard:	GRP-FS-04-G-024		

Candidate Name:	HID#:	Date Issued:	Initial Cert.	Re-Cert.	Page #
Lesly Wall	H0041852	7/2/13	⦿	○	8 of 10

Place a checkmark for Initial Certification or Re-Certification

Task#	Requirement: Sampling Approach	Date	Eval. Initials
29.	**Investigative Sampling**	7/2/13	[signature]
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
30.	**Destructive/Non-Destructive Sampling**	7/2/13	[signature]
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
31.	**Biased-Unbiased Sampling**	7/2/13	[signature]
Standard:	Ref: RCRA Sampling Technical Guide		

Task#	Requirement: Sampling Approach	Date	Eval. Initials
32.	**Scraping Sampling**	7/2/13	[signature]
Standard:	Ref: RCRA Sampling Technical Guide		

Candidate Name:	Lesly Wall	HID#:	H0041852	Date Issued:	7/2/13	Initial Cert.	Re-Cert.	Page #
					Place a checkmark for Initial Certification or Re-Certification	◉	○	9 of 10

Certification Completion Signatures

Evaluator

My signature below indicates that I have EVALUATED the individual named above against the standards outlined in this OJE document. Based on the evaluation,
I recommend Lesly WALL for Multi-Media Sampling certification.
(Print Name)

F. M. HALL		7/2/13
Evaluator Name [Print]	Evaluator Signature	Date

Field Work Supervisor

My signature below indicates my concurrence with the Evaluator's recommendation as identified above.

Pete Hinojosa		7/2/13
Field Work Supervisor (Print)	Training Representative ~~Signature~~	Date

Training Representative

My signature below indicates my concurrence with the Evaluator's recommendation as identified above, and the trainee has completed all pre-requisite training.

James LaPointe		7/10/13
Training Representative Print	Training Representative Signature	Date

Operations Manager

My signature below indicates that I have reviewed the above individual's qualification package, and based upon meeting the training, education, and experience requirements for qualification, I QUALIFY the above named individual as Certified for Multi-Media Sampling certification. certification.

Dave Capelle	D. P. Capelle	7/10/13
Operations Manager Print	Operations Manager Signature	Date

Candidate Name:	Lesly Wall	HID#:	H0041852	Date Issued:	7/2/13	Initial Cert.	Re-Cert.	Page #
					Place a checkmark for Initial Certification or Re-Certification	◉	○	10 of 10

Course #301805 – Sampling Fundamentals

Training Materials

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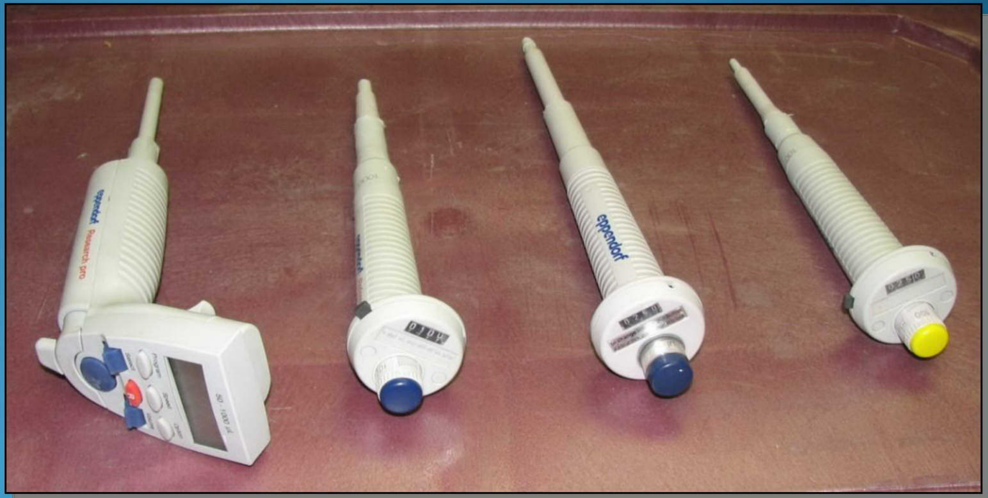
SAMPLING FUNDAMENTALS 301805



Training/Certification Plan

1) Classroom
   - Knowledge Overview

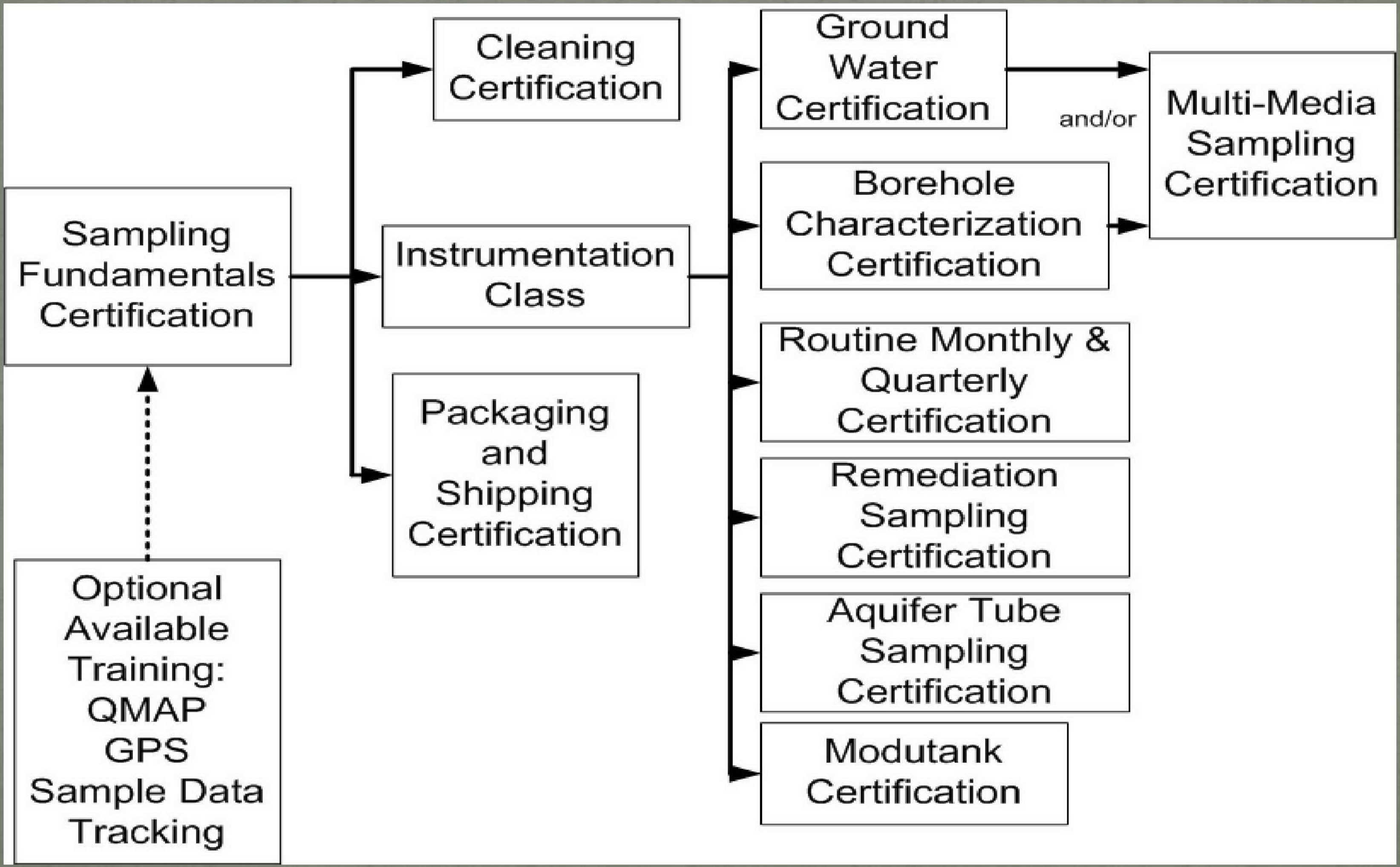
2) OJT
   - Skill training
   - Review of key knowledge

3)OJE
   - Skill evaluation
   - Knowledge evaluation

Training/Certification Plan

- 7 Sampling Certifications (reorganized)
  1. Sampling Fundamentals (*prerequisite*)
  2. Groundwater Sampling
  3. Borehole Characterization
  4. Laboratory Cleaning Equipment
  5. Multi-Media Sampling
  6. Routine Monthly/Quarterly Sampling
  7. Packaging/Shipping
  8. Remediation
  9. Aquifer Tubes
  10. Modutanks

Sampling Training/Certification Flowpath



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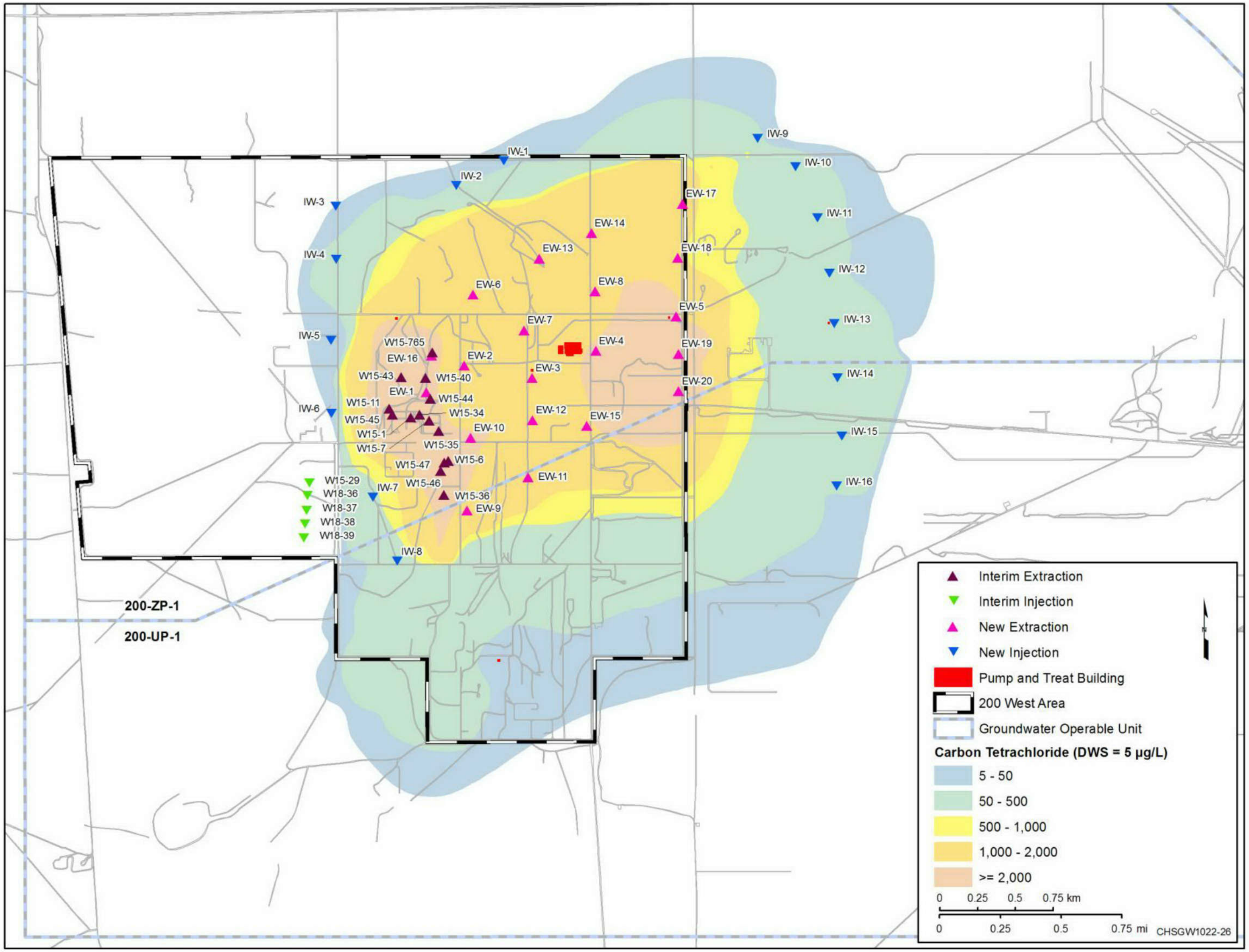
Hanford Site Plumes



Introduction

What is sampling?

- The physical collection of a representative portion of an environment – soil, liquid, solid, vapor.

Why Sample?

- Characterize the extent of contamination and verify that cleanup has been accomplished
- Monitor progress/status of cleanup, ensuring processes are operating correctly

Lessons Learned

- While performing routine monthly sampling a Sampling NCO (Sampler #1) experienced an electrical shock after contacting the submersible pump discharge piping sample manifold.
- An electrical Field Work Supervisor (FWS) and an Electrician inspected the electrical equipment at the event scene. 118VAC was measured coming from the ground in the sampling van to the sample manifold at the well. This was estimated to be the approximate voltage experienced by the Sampler

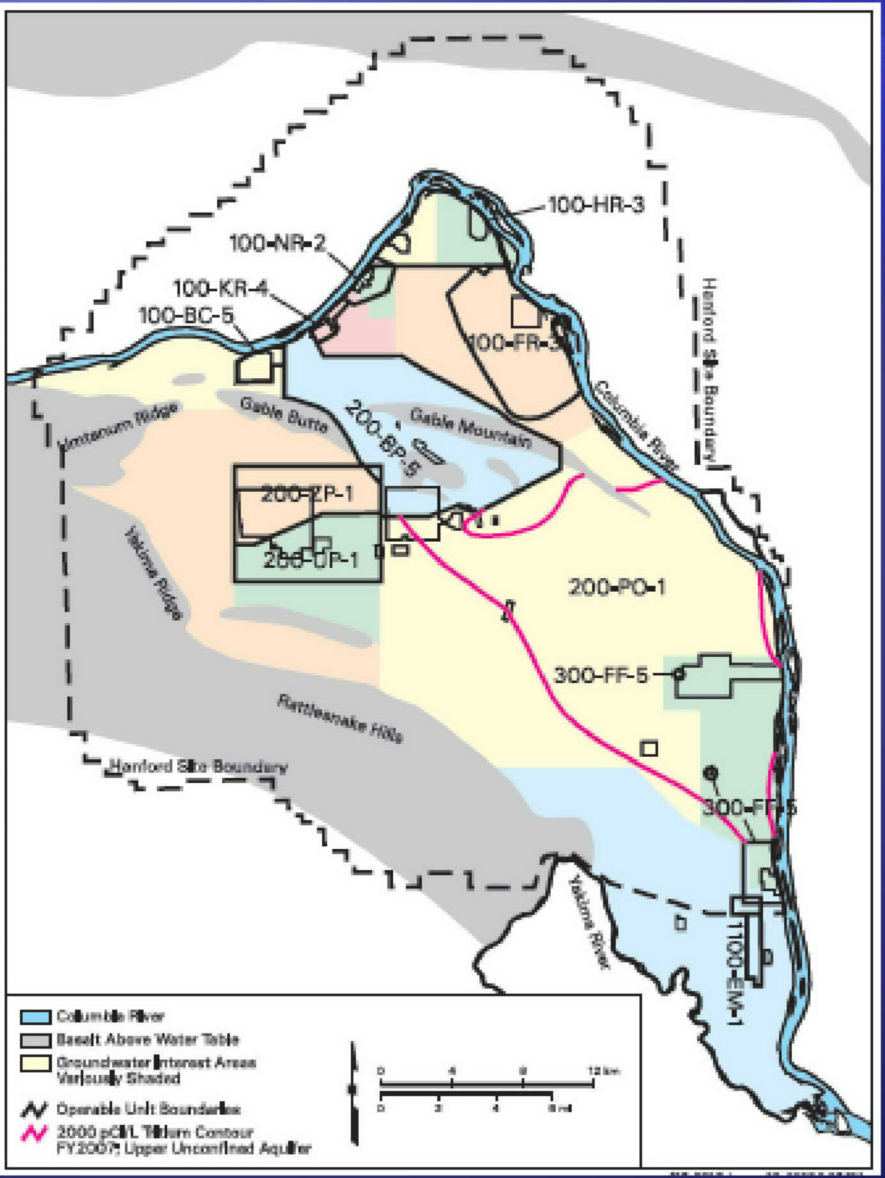
- It was discovered that multiple wires had been disconnected from the well bonding below the landing plate. The wiring was disconnected as a result of a severe twisting motion that had taken place when the three foot piping extension and/or sample manifold was attached to the pump discharge
- That same twisting motion was also determined to have pulled the prongs into the well pump plug.


DANGER
22-05237

How are we going to Prevent this from reoccurring

- Visually inspect all equipment prior to use (including electrical plugs and connectors, etc.) during pre-use inspections and prior to field sampling
- Keep riser pipe stationary during sampling operations. This will include not allowing the pipe to rotate, twist or turn while attaching sampling equipment
- Tag equipment out of surface and have the equipment inspected and/or repaired prior to use

Waste Management Requirements



OBJECTIVE #1 - REGULATIONS

- RCRA/CERCLA
  - **RCRA is primarily designed for currently active waste management operations**
  - **CERCLA** governs the cleanup of inactive waste sites due to **past operations** not otherwise regulated under RCRA
- **SARA** The Superfund Amendments and Reauthorization Act (SARA) amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Waste Management Requirements

Every well and borehole is assigned to a specific OpU with its own Waste Management Plan (WMP) or Waste Control Plan (WCP).

Some are RCRA controlled and others are CERCLA controlled. As such, any waste generated at these locations will be handled in accordance with the appropriate plans.

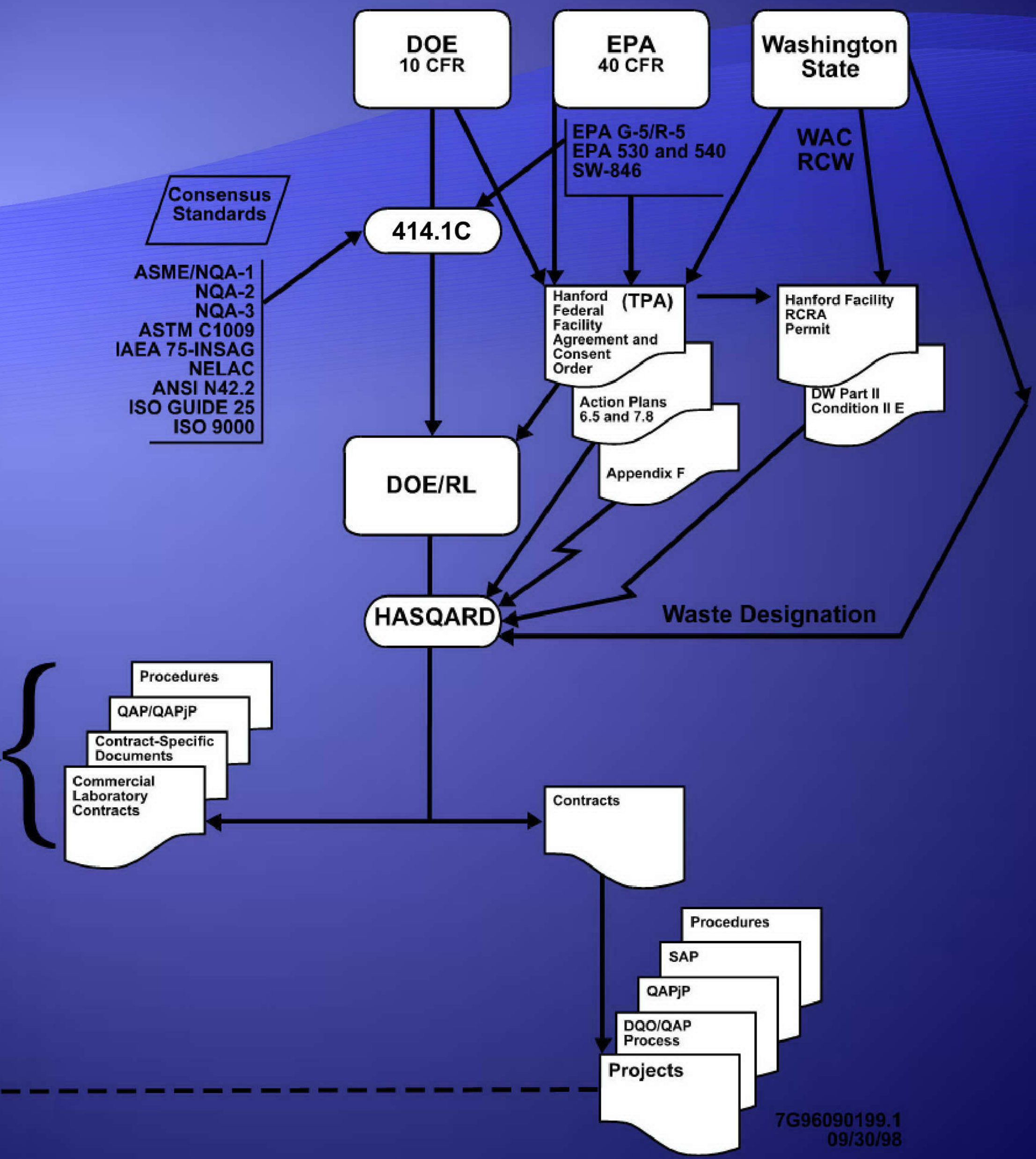
Objective #2: QA/QC

- Hanford Analytical Services Quality Assurance Requirements Document (HASQARD)
  - Maintain consistent level of quality for sampling and analysis services.
  - Four volumes
  - Compilation of numerous other requirements, regulations, laws – (see flow chart).

HASQARD Quality Requirement

"All personnel (e.g., samplers, field analysts, laboratory technicians, scientists, researchers, principal investigators, operators, craftspeople, clerical/support staff, and internal auditors) shall retain responsibility for the quality of their work."

Document Hierarchy Flow Diagram



Data Quality Objectives (DQO)

- Establishes criteria for making appropriate decisions before a sampling and analysis study begins.
- Helps ensure proper data is collected in the most cost effective manner.

Quality Assurance/Quality Control (QA/QC)

Examples of QC Checks:

Equipment Blank - evaluates the effectiveness of the cleaning process and ensures samples are not cross-contaminated from previous sampling events.

Full Trip Blank - evaluate potential contamination of the samples due to the sample bottles, preservative, handling, and transportation.

Low Level Tritium Full Trip Blank – a special full trip blank for tritium analysis using "dead water"

Quality Assurance/Quality Control (QA/QC)

Examples of QC Checks:

Field Transfer Blank (FXR) - evaluate for potential contamination of the environment, near sampling event.

Field Duplicate Sample - determine repeatability of an analytical measurement on identical samples collected as close as possible to the same time at the same locations

Quality Assurance/Quality Control (QA/QC)

Examples of QC Checks:

Split Samples- determine repeatability of an analytical measurement provided by different laboratories on identical samples collected as close as possible to the same time at the same locations.

Blind Sample - a sample that contains a concentration of analyte that is known to the supplier, but unknown to the analytical laboratory

Quality Assurance/Quality Control (QA/QC)

Examples of QC Checks:

Bottle Certificate of Analysis - identifies any levels of potential contaminants which the bottles may introduce to a sample placed in them

Preservation Chemical Certificate of Analysis – identifies the levels of chemical constituents within the preservative

Quality Assurance/Quality Control (QA/QC)

Examples of QC Checks:

Instrumentation Calibration Solutions - Buffer and conductivity solutions used to standardize and check instruments require certificates of analysis

Pre/Post Sampling Documentation – Documents need to be of a quality so they could be used to reconstruct a sampling event years after the sample was taken. The forms used for data collection during sampling are record copies and are never to be discarded.

Achieving Quality

The bottom line to achieving quality –

follow your procedures

By following project procedures you meet your roles and responsibilities, as identified and approved by management, to conduct quality work in accordance with all applicable federal regulations and state laws.

Objective #3 –Sampling Documentation

- Identify the purpose of each of the following documents:
  - Sample Analysis Plan (SAP)
  - Sample Authorization Form (SAF)
  - Chain of Custody (COC)
  - Certificate of Analysis (COA)
  - Explain why a chain of custody is important to the integrity of a sample.

Sample Analysis Plan – (SAP)

- Provides an introduction and background of the project, establishes a quality assurance plan
- The SAP is used by technical support to develop the Sample Authorization Form (SAF) and Chain of Custody (COC).

Sample Authorization Form - (SAF)

- Provides authorization to perform requisite sampling activities as identified within the SAP.
- Identifies the contracted laboratories, project number/title, analytical methods, containers, preservation, hold times, charge codes, etc.
- Operator reviews the SAF and compares it with the COC, to ensure consistency and accuracy

Sample Matrix

- The MATRIX is used when performing sampling at boreholes.
- Used to compare sample #'s, intervals, Well ID, laboratories with the COCs.
- Informs the operator what to expect during the drilling operation such as soil, water, QC requirements (etc.).

COC (Chain of Custody)

- Chronological document indicating the seizure, custody, control, transfer, analysis, and disposition of sample and/or chemicals.
- COC can be considered legal evidence, it must be handled in a conscientious and careful manner
- Original Chain of Custody (COC) always stays with the samples

COC (Chain of Custody)

- Sample possession may be signed over to another person or to a Sample Storage Unit (SSU).
- Double checking and peer reviews will help to avoid mistakes.
- Disposition of COC forms
- Information obtained from COC
  - Preservatives, bottles, analysis, etc.
- Information required on COC from NCO

Sample Reports

- Groundwater Sample Report (GSR)
- Liquid Sample Report (LSR)
- Vapor Sample Report (VSR)
- Solid Sample Report (SSR)
  - Sample Reports provide operators with a consistent, standardized way of documenting what they need to know in order to properly prepare and take samples for analysis.
  - These data forms are legal records.
  - Preservatives required are listed on these forms

Sample Reports

General QA Requirements

- One-over-one review of the Sample Reports is required - Signed by the operator and reviewed by supervision
- Ensure that all fields on the form are completed or marked NA if not applicable

Logbooks

Logbooks and data forms are the means for providing a daily handwritten record of all sampling activities and are generally considered the primary record for sampling activities.

Logbooks

- General Requirements for Logbooks
  - permanently bound
  - sequentially numbered pages
  - entries will be made in indelible ink
  - corrections are made by marking the erroneous data through with a single line, entering the correct data, and initialing and dating the changes

Logbooks

- General Requirements for Logbooks
  - correction fluid and erasers are not to be used
  - pages will not be removed from logbooks for any reason
  - line through, initial and date blank space
  - blank pages shall be marked "page intentionally left blank" or shall be lined through, initialed, and dated
  - only authorized persons may make entries in logbooks

Logbooks

HASQARD requirements

A significant amount of information Is required to be documented in logbooks by the HASQARD. Some items include:

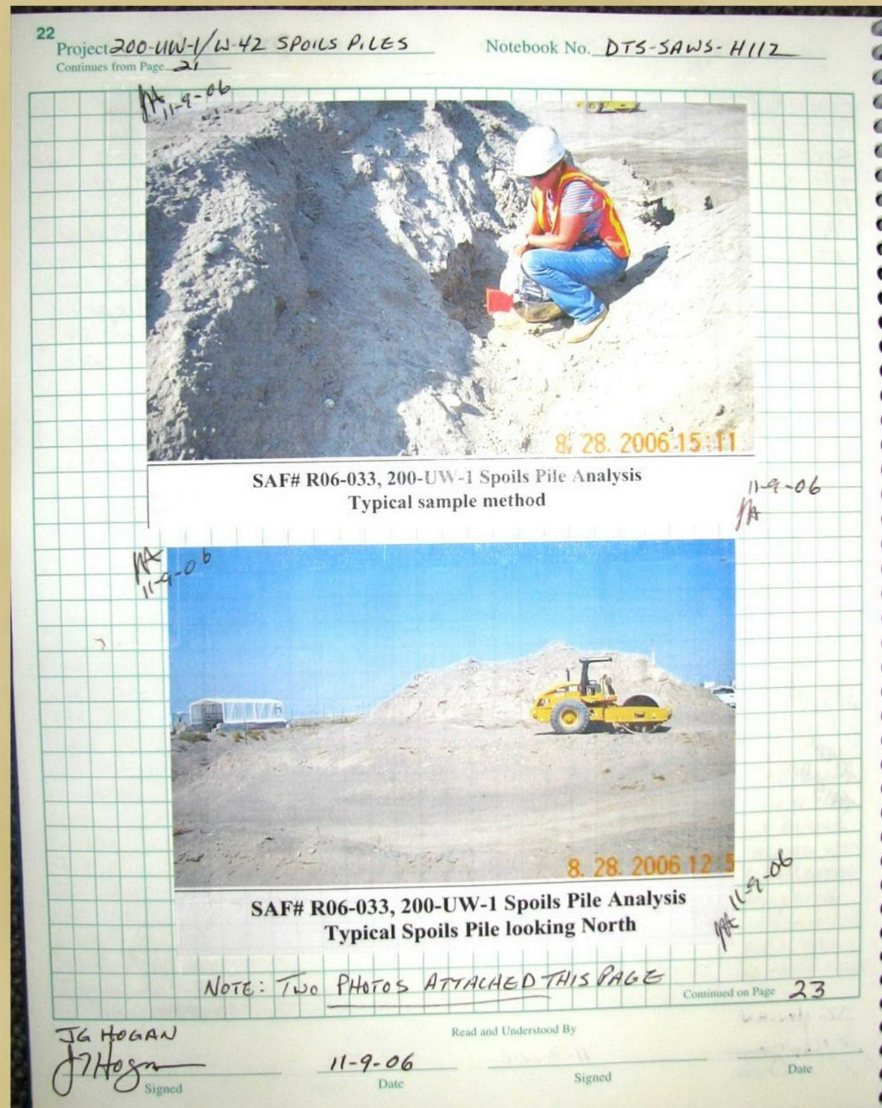
- The day, date, and time the task started
- Details of any samples collected
- Any equipment failures or breakdowns
- Any anomalies noted

Logbooks

S&GRP Sampling Variance

S&GRP Sampling uses a waiver to logbook requirements in that we are allowed to copy, cut, and paste information, as well as pictures into a field logbook.

Field Logbook Variance



Logbooks

Logbook disposition

- When the book is completed or no longer needed it is turned into the Records Management Specialist

Examples of logbooks/notebooks

- Project assigned, including field characterization: Bore Holes, Drill sites, waste sites, drums, multi-media, specific/unique jobs
- Field Monitoring Logbooks: Routine groundwater sampling
- Equipment/Maintenance: Millipore, Cleaning station,
- Sample Storage Units

Objective #4 – Sample Containers

- Identify each type of normally used sample container and describe the use for each.
- State the purpose for ensuring sample containers have an associated lot number.

Sample Container Types

Bottles

Bottles are selected by the laboratory based upon the analytical requirements for a sample type.

The COC/GSR/LSR/etc. will identify the type and size of container to be used.

Sample Container Types

Bottles

The purpose of logging LOT numbers is traceability.

In the event a particular trait of a lot number is discovered it enables us to identify all samples which were affected by that particular lot.

Bottle type terminology and abbreviations

- Nalgene™ / Lexan plastic
- aG – Amber Glass
- aGs – Amber Glass with septum cap
- aGs* – Amber Glass with septum cap – no headspace in container (with meniscus)
- aG/T – Amber Glass with Teflon Lined Lid

Bottle type terminology and abbreviations

- P – Plastic (Polyethylene)
- G – Glass
- Gs – Glass with septum cap
- Gs* – Glass with septum cap - no headspace in container (with meniscus)
- NOTE: May use amber glass (aG) in the place of glass or plastic, but not vice versa, aG is an upgrade (better). Before varying specified container, contact the FWS.

Sample Container Types

- **Tins**

  Used for soils and moisture content analyses – they do not have to be certified clean and therefore, do not have a lot number associated with them.

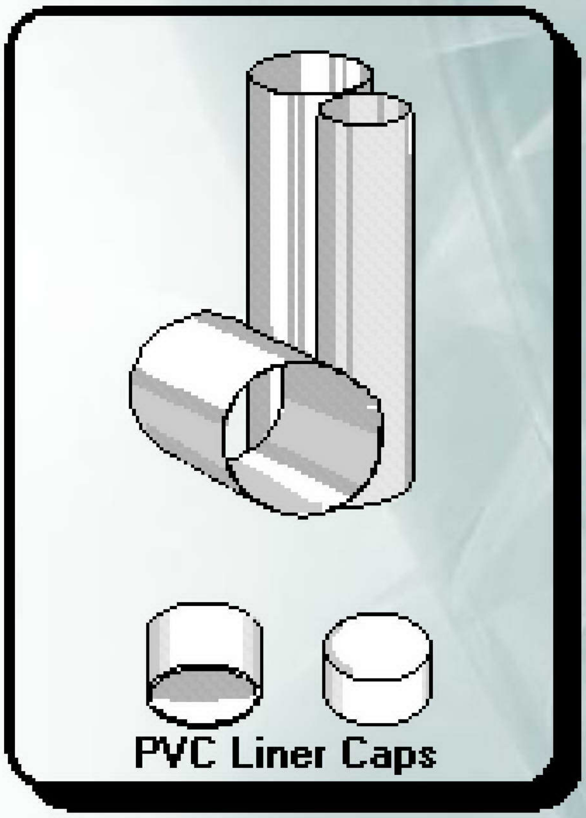
- **Carboys**

  Carboys are usually made of plastic. They are used to collect large quantities of liquids.

Sample Container Types

- Liners

Cylinders made of Lexan or stainless steel and are used to gather soil samples.



Sample Container Types

- Tedlar bags - used to collect vapor samples

- Summa Canisters - made of stainless steel, come with a vacuum in order to pull a vapor sample into the canister.

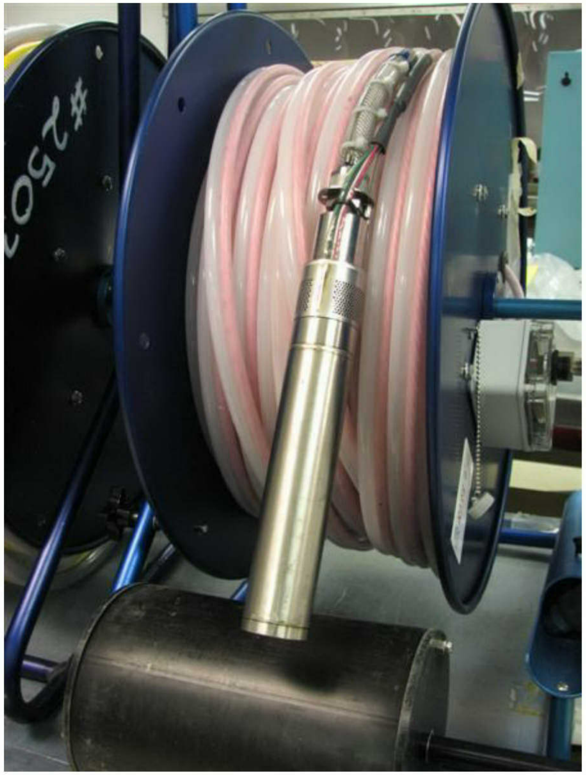
Objective #5 – Sample Equipment

- Identify commonly used types of sample equipment.

Liquid Sample Equipment

Electric Submersible Pumps	Boreholes, Well Development, Groundwater Sampling
Hydro-Star Pumps	Wells with limited water.
Portable Grundfos Pumps	Wells without pumps and piezometers
Redi-Flo II Redi-Flo III	Boreholes, Groundwater Sampling, Wells with limited water.
Airlift	Piezometers
Peristaltic	Variable speed collection, depending on pump head type. Used for both composite samples and individual samples aquatubes, N-Springs

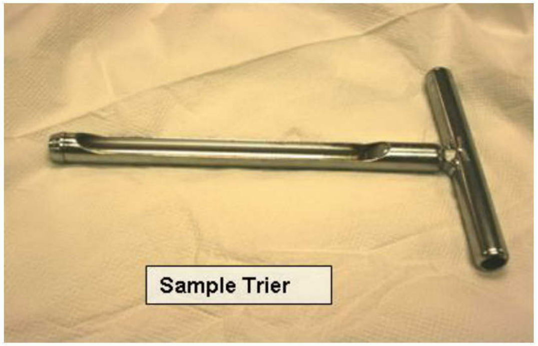
Sample Equipment - Pumps

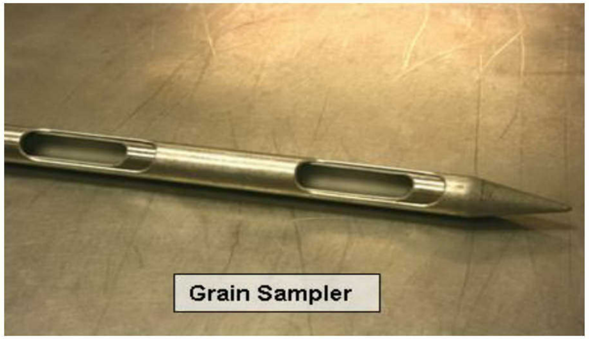


Solid Sample Equipment

Grain Sampler	Powdered or granular solids
Sampling Trier	Preferred when powdered or granular material is moist or sticky. Soft or loose soil samples.
Trowel or Scoop	Dry, granular or powdered material, or surface soil collection. Material consisting of large particles.
Soil Auger	Soil samples 3 inches or deeper.
Drum Sampler	Waste pile and granular or powdered material.
Split Spoon	Collects relatively undisturbed soil samples at depth.

Solid Sample Equipment





Objective #6 – Preserve Sample Bottles

- State the purpose of preserving bottles.
- Identify the primary chemicals used to preserve bottles.
- Explain how and why preserved bottles are controlled.
- Identify the types of equipment used to dispense preservatives.
- Discuss the difference between nitric acid and ultrex nitric acid including when/why each is used.
- List the minimum personal protective equipment required during bottle preservation activities.
- Given any ampule used for post-preservation of samples, explain what the nomenclature on the labels means

Sample Preservation

- Purpose of preservation
  - Retard biological action
  - Retard hydrolysis and radiolysis of chemical compounds and complexes
  - Reduce volatility of constituents
  - Reduce absorption and adsorption effects

In summary - Maintain the sample's integrity

Bottle Preservation

Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles.

Normally accomplished by locking the bottles in a secure location or in a locked sample vehicle when not attended.

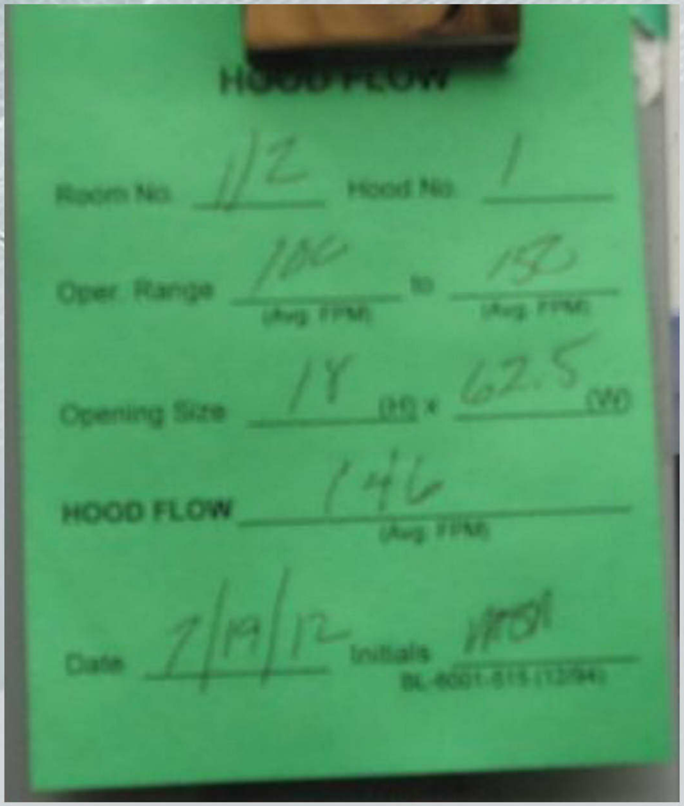
Tools/Supplies for Preservation

- Eppendorf metered dispensers
  - Pipette tips

Tools/Supplies for Preservation

– Metered reagent dispensers

Ventilation Hood



Ventilation Hood Work Practices

- All work involving hazardous chemicals should be performed inside a ventilation hood.
- Before work begins, check to be sure the hood fan is turned on.
- Check the airflow by observing the monitor, or in the absence of a monitor use a "kimwipe" taped to the open sash.

Ventilation Hood Work Practices

- Check the inspection sticker to determine if the hood has been currently inspected and what performance rating it was given. If observable questions arise about inspection or current hood performance, contact the FWS.
- Ventilation hoods should be used with the sash positioned at 18" or lower when possible for optimal performance and as a protective shield.

Ventilation Hood Work Practices

- All equipment and materials should be located at least 6" back inside the hood from the sash face.
- Large items should be elevated at least 2" from the hood base to insure airflow to the baffle opening at the rear interior base of the hood

Ventilation Hood Work Practices

- Do not use the ventilation as a storage cabinet. Excessive storage can obstruct air flow and cause areas of low air velocity at the face opening.
- Do not extend face or head inside the hood.
- Minimize traffic and other sources of cross drafts (i.e. open windows, doors, fans, etc.) which may pull contaminated air from the hood.

Ventilation Hood Work Practices

- When using electrical equipment in a hood take extra precautions to prevent spark sources from causing fire or explosion. All electrical connections should be made outside the hood.
- Emergency plans should be understood by all hood users in the event of an unexpected occurrence such as fire or explosion in the hood.

Ventilation Hood Work Practices

- If assistance is needed regarding the safe operation of a ventilation hood, contact the FWS.

Tools/Supplies for Preservation

- Preservatives
  - All chemicals shall be stored in the proper chemical storage unit
- Nitric acid (HNO_3)
- Ultrex (w/ pure water)
- Sulfuric acid (H_2SO_4)
- Hydrochloric acid (HCl)
- Sodium hydroxide (NaOH)
- Zinc acetate ($Zn[CH_3COO]_2$)
- Sodium thiosulfate ($Na_2S_2O_3$)
- Methanol

Reagent Usage Log (RUL)

Reagent Usage Logsheet

Preservative STD	Manufacturer Prepared By:	Purchase Order No.	Concentration (various units)	Lot # / STD #	Date Opened	Date Emptied	Expiration Date

Date	Initials	Comments	Date	Initials	Comments

Preservation Safety

- PPE
  - lab coat (or long sleeve coveralls)
  - protective eyewear
  - chemical resistant gloves
- Additional Safety Equipment
  - Portable Eyewash
  - Safety Shower
  - spill kit
  - certified vent hood

Emergency Notifications

- Proper notifications to management and facility building landlord shall be made in the event of a spill.

- In the event of a chemical exposure and/or contact, follow the recommendations of the MSDS, notify management and report to Site medical.

Waste Management

- SAAs are established and maintained jointly by Sampling and WSCF personnel.
- If/when containers are full, notify FWS

Objective #7 – Water (Ultra/High Purity)

- Objectives:
  - Define High Purity Water (HPW) & Ultra High Purity Water (UHPW).
  - Identify the systems and components used to make HPW and UHPW.
  - Explain the difference between conductivity and resistivity.

High Purity Water

- High Purity Water (HPW)
  - De-Ionized (DI) / HPW - removal of trace metals.
  - Used for lab and field cleaning

- Measurement of HPW
  - When water is flowing to the cleaning station, Myron 760 indicates > 15-megohms-cm.

Ultra High Purity Water

- Ultra High Purity Water (UHPW)
  - The feedwater for the Milli-Q system comes from the potable water system.
  - The Milli-Q system produces water of Type I quality. This has a resistivity of 18.2 megohms-cm
  - Type I water is referred to by S&GRP as UHPW.

Operation of Millipore System

Millipore System

Milli-RiOs and the Milli-Q

The combination of these two units provides "**ultra high purity water**" with a final resistance value >18.2 megaohms (MΩ) which is monitored as it is being dispensed at the Milli-Q A10.

This ultra high purity water (Type I) is used to meet QA/QC requirements for sampling.

Objective #8 –Sampling Field Instruments

- Explain purpose of instrument pre-checks

Pre-Use Checks are used to verify that the instruments are working within the expected parameters.

Instrumentation

- Types of Meters
  - pH Meters
  - Conductivity
  - Oxygen Reduction Potential (ORP)
  - Turbidity
  - Dissolved Oxygen (DO)

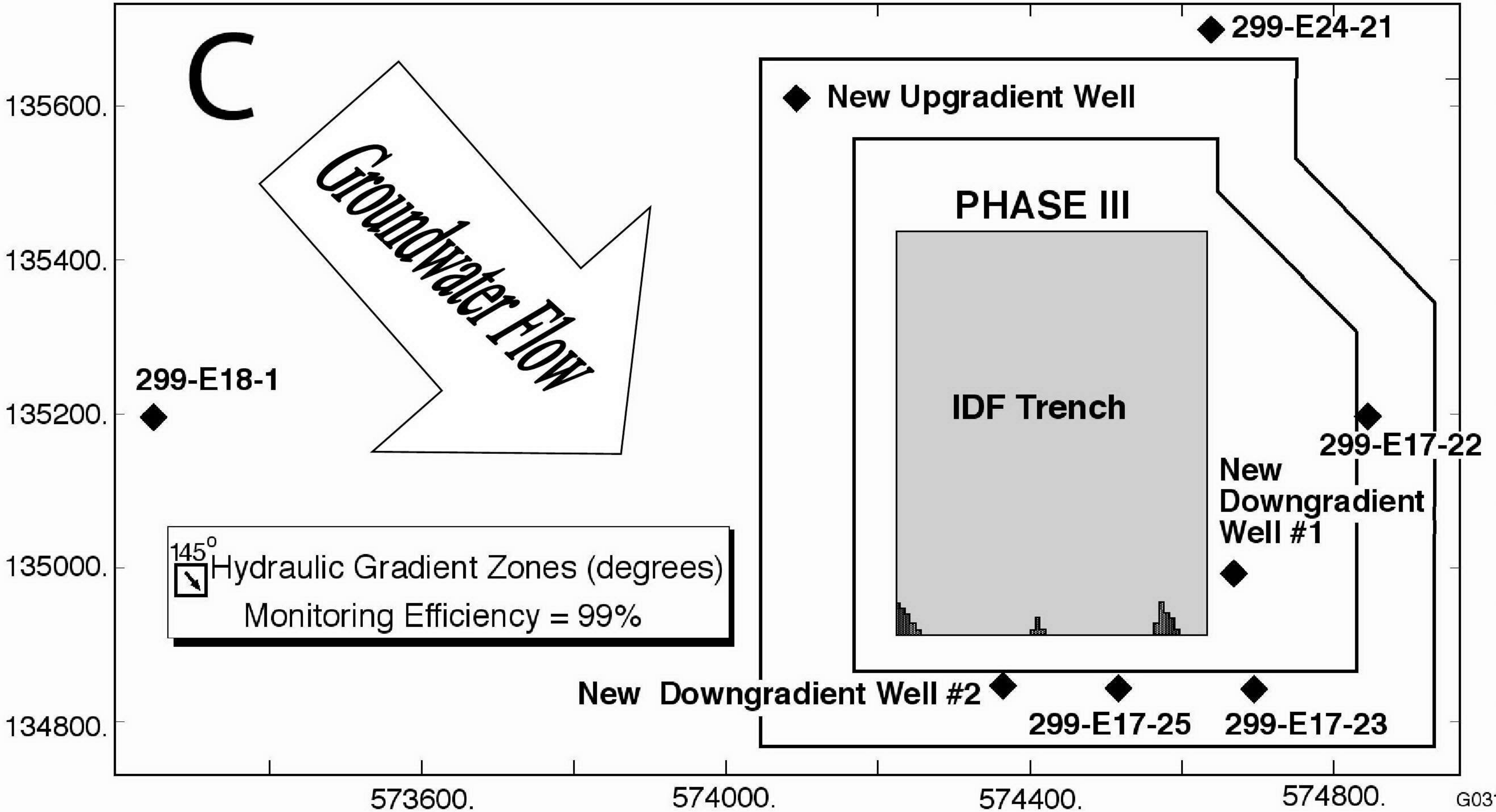
OBJECTIVE #9 –MEASURE GROUNDWATER LEVEL

- Objective:
- Explain what the terms “upgradient” and “downgradient” mean with respect to groundwater flow.
- Explain what each of the following terms means:
  - Reference Point
  - Measuring Point
  - Adjusted Depth to Water
- Given a picture of an e-tape measurement and a designated point on the tape, identify the correct reading which should be documented on the groundwater level measurement form.

Background Information

- Measurements of depth-to-water (DTW) in wells represent some of the most basic monitoring information collected about the aquifers beneath Hanford.
- This information supports many of the goals of the groundwater project.
- Our interest is in which direction the groundwater flows. Contaminant plumes in the aquifer move with the groundwater flow, so the direction of groundwater flow indicates the future path in which a groundwater plume will travel

upgradient / downgradient



MEASURING WATER LEVELS

Rugged Reader

E-Tape

Reference Point (RP)

- A point designated on a well that has been precisely surveyed for elevation and is used to compute the actual elevation of water in the well. Many reference points are stamped with an "X" on the well casing.

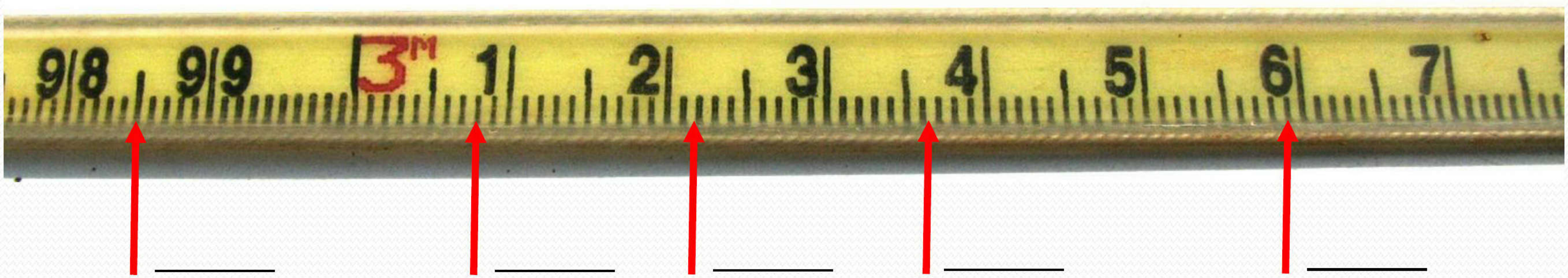
Measurement Point (MP)

- A point on a well from which the distance to the water in the well is actually measured. Top of Manhole (TOM), Top of Case (TOC), Top of Tee (TOT), Top of Pump Plate (TOPP), etc.

MP-RP / Adjusted Depth to Wtr

- The elevation of the measurement point minus the elevation of the reference point (i.e., the vertical offset of the measurement and reference points). When the MP and RP coincide, the MP-RP is zero. When the MP is above the RP, the MP-RP is greater than zero. When the MP is below the RP, the MP-RP is less than zero.
- (Depth to Water from MP) - (MP-RP) = Adjusted Depth to Water

Reading an E-Tape



______ ______ ______ ______ ______

Field Logging and Electronic Data Gathering (FLEDG) objective 10

- The FLEDG system provides an electronic tool for automating water-level measurements and groundwater field sampling activities.

OBJECTIVE #11 – USE OF MOTOR VEHICLES

- Off-road vehicle travel and activities criteria must be met depending on the fire danger level. All diesel units equipped with catalytic converters must now be treated with the same limitations as gasoline powered units. The definition of "Off-Road" is an unpaved surface where the vehicle is or could be in contact with natural vegetation.

OBJECTIVE #11 – USE OF MOTOR VEHICLES

Fire Danger Level	LOW	MODERATE	HIGH	VERY HIGH	EXTREME
Gasoline Powered or Diesel Vehicle produced in 2007 or newer *3	OK	OK	Not Normally Permitted *1	Not Permitted	Not Permitted
Diesel Powered Vehicle produced in 2006 or older *3	OK	OK	OK	OK	OK Prior to 10 am *2
Battalion Chief Concurrence	N/A	N/A	Required	Required	Required

Objective 12 - Describe requirements for Sample Storage Unit

- Describe the general requirements for Storing Samples.
- Explain the purpose of a Sample Storage Unit (SSU).
- Describe when a SSU acquires/relinquishes custody of samples.
- State the general storage requirements for samples in a SSU.

Objective 12 - Describe requirements for Sample Storage Unit

When storage is necessary, the samples shall be:

- Stored in predetermined physical and environmental conditions
- Daily verification and documentation of storage temperature shall be maintained in accordance with project Data Quality Objectives (DQO).
- Various methods are allowable to verify temperatures have been properly maintained. These include the use of thermometers, digital readouts, or Storage Temperature blanks (20 ml sample bottle with water) used to validate proper storage temperatures have been maintained.

Objective 12- Describe requirements for Sample Storage Unit

Sample Storage Units (SSU)

- An enclosure used to store samples under the correct physical and environmental conditions. Depending on the unit and its location, the SSU may not have a lock, but will be secured in a locked area (i.e. Sample Storage Area).
- Sample Storage Units (SSU) may be units that maintain an appropriate environmental condition, e.g., proper temperature, such as a portable electrically powered cooler (SSUP), a freezer (SSUF), or a refrigerator (SSUR).

Objective 12 - Describe requirements for Sample Storage Unit

Sample Storage Units (SSU)

- Chain of custody – The sample's original chain of custody must stay with the sample at all times. This includes the period while it is in storage. The COC in a controlled manner (e.g., locked area or cabinet) near the sample. When samples are placed in an SSU the COC is relinquished to the SSU. The next person to transport the sample will receive the COC/Sample from the SSU

OBJECTIVE #13 – EXPLAIN ONSITE PACKAGING AND SHIPPING REQUIREMENTS

- Identify the regulatory agencies which define the shipping requirements for:
  - On-site Shipping Activities
  - Off-site Shipping Activities
  - List the on-site laboratories used by S&GRP.

OBJECTIVE #13 – EXPLAIN ONSITE PACKAGING AND SHIPPING REQUIREMENTS

- On-site Shipping Activities – Controlled by DOE requirements
- Off-site Shipping Activities – Must meet DOT and DOE requirements
- List the on-site laboratories –
  - WSCF
  - 222-S
  - ESL/325 Building
  - 329 Building

OBJECTIVE #14 – EXPLAIN THE PROTOCOL REQUIREMENTS OF CLEANED EQUIPMENT AND CONTROL

- Discuss the ramifications of not having clean sampling equipment when conducting sampling activities.
- Identify the requirement for sampling equipment cleanliness.

OBJECTIVE #14 – EXPLAIN THE PROTOCOL REQUIREMENTS OF CLEANED EQUIPMENT AND CONTROL

An important aspect of quality control is the decontamination, e.g., cleaning/rinsing for groundwater sampling, of field sampling equipment. Improperly cleaned and prepared sampling equipment can lead to misinterpretation of environmental data due to interference caused by cross-contamination.

OBJECTIVE #14– EXPLAIN THE PROTOCOL REQUIREMENTS OF CLEANED EQUIPMENT AND CONTROL

- Control of cleaned equipment is done by placing it in a locked storage area; i.e., WSCF/6268.
- All cleaned equipment is wrapped in foil with the shiny side out.

Questions?

CH2MHILL
Plateau Remediation Company

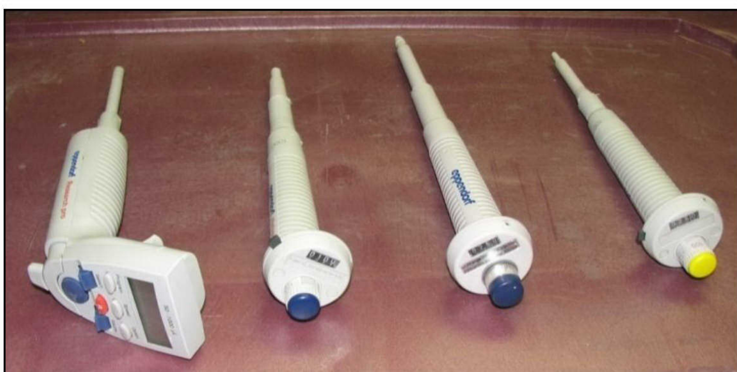
Soil and Groundwater Remediation Project

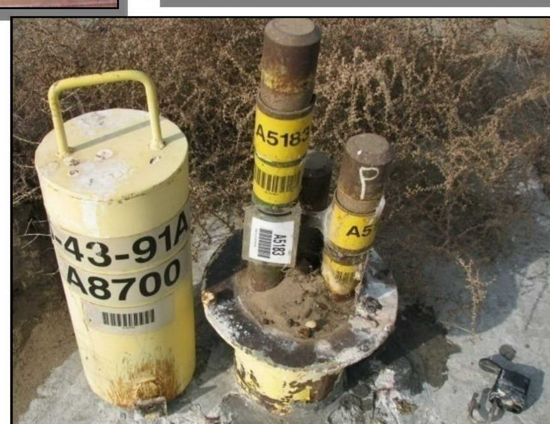
SAMPLING FUNDAMENTALS

STUDENT MANUAL

Course #301805

(Rev 3)





Sampling Fundamentals

Reviews - Approvals

The signatures below represent review and approval of the training materials associated with 301805 - Sampling Fundamentals classroom course materials:

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Sampling Fundamentals

Change Record

Revision 3 7/30/2012 Updated material

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Sampling Fundamentals

Water-Level Measurement

Well Name: 299-W22-44	Well ID: A4975	Project Name: S-SX Tank March	Measurement Date:
Measurement Point (MP) Description: Top of pump plate		Reference Point (RP) Description: Top of outer casing	
Measuring Device Type: [ ] Steel Tape [ ] E-Tape [ ] Other (Specify) ________________			Measuring Device ID:

Previous Adjusted Depth to Water: 70.979 m

Times are recorded as: [X] Pacific Standard Time (PST) [ ] Pacific Daylight Time (PDT)

Dry Measurement: _______ Yes

Time of Measurement	Depth to Water from MP	Depth of Water Units	MP-RP	MP-RP Units	Optional: Adjusted Depth to Water*	Optional: Adjusted Depth to Water Units
		m	0.004	m		m
		m	0.004	m		m
		m	0.004	m		m

*Adjusted Depth to Water = Depth to Water from MP - (MP-PR)

Preprinted MP-RP value verified? [ ] Yes [ ] No

Was the portion of the measuring device(s) which came into contact with the well water plus approximately 3 feet decontaminated (cleaned) using a clean towel and potable water? [ ] Yes [ ] No

Access Requirements and Other Information:
HPT COVERAGE NOT REQUIRED
In surface zone. HPT Coverage required for this well. SCA, underground rad.

Comments:

Measured by: (Print Name, Signature, and Date)

Reviewed by: (Print Name, Signature, and Date)

..........76

Sampling Fundamentals

INTRODUCTION

Fifty years of nuclear weapons production resulted in approximately 1.7 trillion liters (450 billion gallons) of liquid waste being released to the ground at the Hanford Site. Some of the associated contaminants have reached the groundwater. Hazardous chemical contaminants include carbon tetrachloride, chromium, and nitrates. Radioactive contaminants include iodine-129, strontium-90, technetium-99, tritium, and uranium. The Soil and Groundwater Remediation Project (S&GRP) is largely responsible for ensuring the implementation of a remediation plan developed for the protection of the Columbia River Corridor. DOE has established S&GRP to develop a site wide management process to protect water resources, ecological resources, and human health. The S&GRP Field and Well Sampling organization provides quality samples in support of RCRA, CERCLA, TPA agreements, and DOE orders. Over 2,400 sampling events take place each year in support of groundwater monitoring. In addition, dozens of boreholes are drilled and sampled for waste site characterization. This sampling provides DOE and other site contractors the information necessary to meet regulatory requirements, protect the Columbia River, and to determine long term stewardship strategies.

What is sampling?

Sampling is the physical collection of a representative portion of an environment. A representative sample must be collected and handled in such a fashion as to preserve its original form and chemical composition, as well as to prevent contamination or changes in concentration of the materials to be analyzed. It is imperative to ensure sample integrity and maintain quality assurance standards for a sample to be "typical" of the larger body of the material.

Why Sample?

Environmental samples are taken for many reasons. These include:

- If a waste generator cannot readily identify the materials being produced, samples of those streams may need to be collected and sent to a laboratory for analysis and identification in order to comply with regulatory requirements.
- When conducting cleanup activities, samples are needed to characterize the extent of contamination at the site and to verify that cleanup has been accomplished.
- Samples are required to monitor effluents permitted under the Clean Water Act (CWA) or state WAC 173-216 discharge permits.
- Samples are also taken in order to verify that processes are operating correctly.

At Hanford, sampling is done for all the above reasons and to monitor groundwater for movement of existing plumes.

The remediation activities at Hanford are conducted in accordance with an Environmental Protection Agency (EPA) approved Record of Decision (ROD). S&GRP's role in the ROD is that samples were collected prior to developing the ROD to identify the extent of contamination in the environment. A plan was then developed on how the environment will be treated to remove contaminates and submitted to the EPA for approval. Their approval is demonstrated in the ROD. All present and future sampling activities conducted by S&GRP are done to demonstrate the effectiveness of the remedial actions.

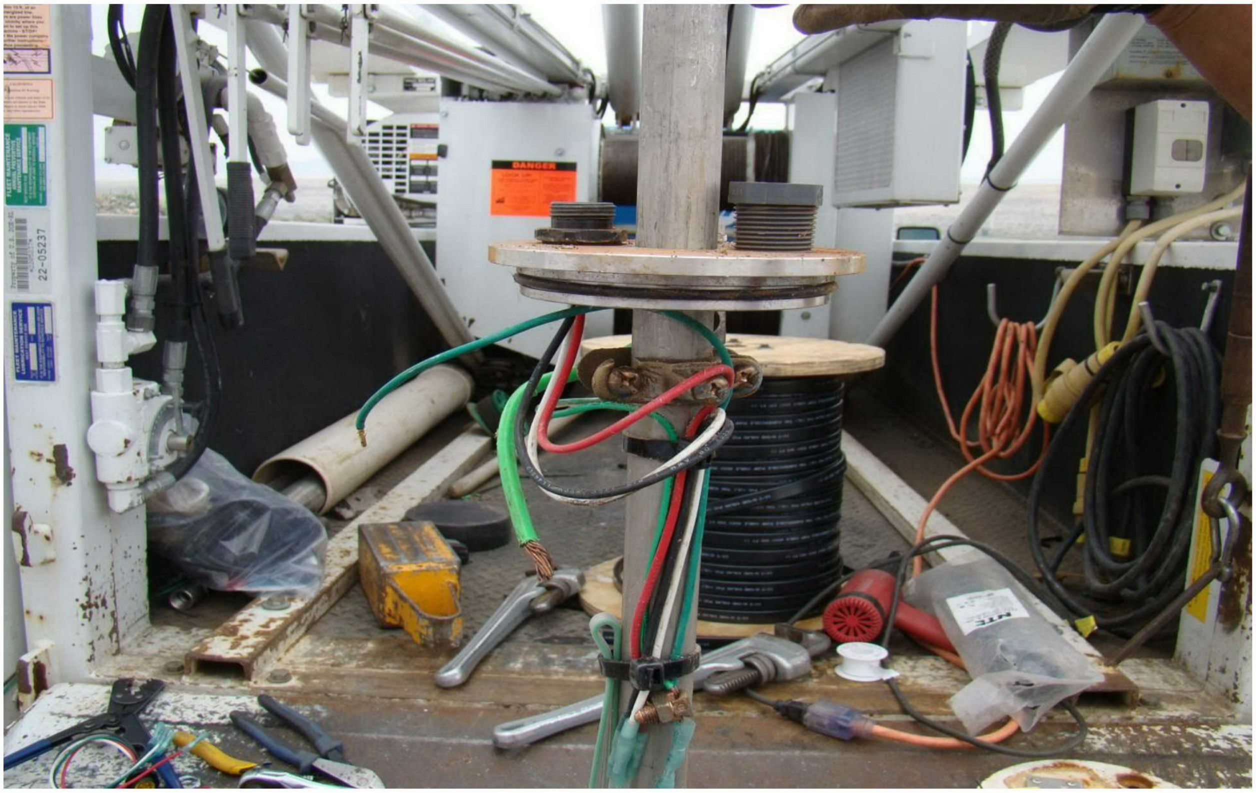
LESSONS LEARNED

While performing routine monthly sampling at well 199-H4-84 in the 100H area on 08/01/13, a Sampling NCO (Sampler #1) experienced an electrical shock after contacting the submersible pump discharge piping sample manifold. The electric submersible pump and its portable power generator were immediately secured and all work in the area was halted. The area was cleared of personnel and the event scene was preserved. The sampler was sent to the onsite occupational services provider for evaluation and was returned to work without restriction. Subsequently, an event investigation was initiated by project management and safety personnel.

An electrical Field Work Supervisor (FWS) and an Electrician inspected the electrical equipment at the event scene. After re-creating the event scenario, 118VAC was measured coming from the ground in the sampling van to the sample manifold at the well. This was estimated to be the approximate voltage experienced by Sampler #1. The inspection concluded that the electric generator cable was in satisfactory condition; however, the male end of the well pump plug was damaged as one of four prongs was missing and two additional prongs were recessed into the plug. The one missing prong was determined to be the equipment ground lead.

Later that afternoon, well maintenance personnel performed troubleshooting and repair of the equipment at well 199-H4-84. After removal of the well pump for inspection, it was discovered that multiple wires had been disconnected from the well bonding below the landing plate. The inspection concluded that the wiring was disconnected as a result of a severe twisting motion that had taken place when the three foot piping extension and/or sample manifold was attached to the pump discharge. That same twisting motion was also determined to have pulled the prongs into the well pump plug.

Sampling Fundamentals



How are we going to prevent it in the future?

Visually inspect all equipment prior to use (including electrical plugs and connectors, etc.) during pre-use inspections and prior to field sampling.

Keep riser pipe stationary during sampling operations. This will include not allowing the pipe to rotate, twist or turn while attaching sampling equipment.

Tag equipment out of surface and have the equipment inspected and/or repaired prior to use.

OBJECTIVE #1 - REGULATIONS

Objective:

- Identify the Hanford document which compiles all applicable federal and state sampling activity regulations for the Soil and Groundwater Remediation Project (S&GRP).
- Identify the person responsible for the quality of work performed during S&GRP sampling activities.
- Identify how S&GRP personnel can ensure they are in compliance with all federal and state regulations during work activities.

There are many regulatory agencies and documents which either drive or govern our sampling operations. The regulations may dictate sampling frequency, lists of constituents, sampling techniques, and much more.

Sampling Fundamentals

RCRA/CERCLA

Much of the groundwater monitoring and sampling is performed in accordance with guidance and/or regulations established by the Resource Conservation and Recovery Act (RCRA). For instance, the tank farms are largely regulated, and therefore monitored and sampled in accordance with requirement established under RCRA. However, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) also apply to much of our work.

The difference in RCRA and CERCLA can be summarized by the following:

RCRA is primarily designed for currently active waste management operations (treatment, storage and disposal facilities or TSDs) and waste sites previously associated with operations regulated under RCRA, i.e., past-practice sites. RCRA regulates only hazardous chemicals and/or the hazardous component of mixed waste. Radioactive contaminants are not regulated under RCRA.

CERCLA governs the cleanup of inactive waste sites due to **past operations** not otherwise regulated under RCRA. Radioactivity and radioactive contaminants are subject to regulation under CERCLA.

Workers must be aware if they are working at a CERCLA or RCRA site in order to dispose of waste and handle samples appropriately. The Well Waste Spreadsheet identifies CERCLA wells and the waste storage (disposal) location for waste generated at these wells. If the well site is not on the spreadsheet, it is considered RCRA waste and the associated waste is stored at a 90-day Accumulation Area.

SARA

The Superfund Amendments and Reauthorization Act (SARA) amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first six years and made several important changes and additions to the program. SARA:

- stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites;
- required Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations;
- provided new enforcement authorities and settlement tools;
- increased State involvement in every phase of the Superfund program;
- increased the focus on human health problems posed by hazardous waste sites;
- encouraged greater citizen participation in making decisions on how sites should be cleaned up; and
- increased the size of the trust fund to $8.5 billion

Hanford Operable Units (OUs)

Hanford 100-Area **Hanford 200-Area** **Hanford 300-Area**

Sampling Fundamentals

Hanford 100-Area		Hanford 200-Area		Hanford 300-Area	
100-BC-1	EPA	200-BC-1	EPA	300-FF-1	EPA
100-BC-2	EPA	200-CS-1	Ecology	300-FF-2	EPA
100-DR-1	Ecology	200-CW-1	Ecology		
100-DR-2	Ecology	200-CW-3	EPA		
100-FR-1	EPA	200-CW-5	EPA		
100-FR-2	EPA	200-IS-1	Ecology		
100-HR-1	Ecology	200-LW-1	Ecology		
100-HR-2	Ecology	200-LW-2	Ecology		
100-IU-1	EPA	200-MG-1	Ecology		
100-IU-2	EPA	200-MG-2	EPA		
100-IU-3	Ecology	200-MW-1	EPA		
100-IU-4	Ecology	200-PW-1	EPA		
100-IU-5	EPA	200-PW-2	Ecology		
100-IU-6	EPA	200-PW-3	EPA		
100-KR-1	EPA	200-PW-4	Ecology		
100-KR-2	EPA	200-PW-5	EPA		
100-NR-1	Ecology	200-PW-6	EPA		
200-SC-1			EPA		
200-SW-1			Ecology		
200-SW-2			Ecology		
200-TW-1			EPA		
200-TW-2			Ecology		
200-UR-1			Ecology		
200-UW-1			Ecology		

The NPL site groundwater OUs and corresponding lead regulatory agency are as follows:

Sampling Fundamentals

Hanford 100-Area		Hanford 200-Area		Hanford 300-Area	
100-BC-5	EPA	200-BP-5	EPA	300-FF-5	EPA
100-FR-3	EPA	200-PO-1	Ecology		
100-HR-3	Ecology	200-UP-1	Ecology		
100-KR-4	EPA	200-ZP-1	EPA		
100-NR-2	Ecology				

Operable units were initially established on a geographic basis but have since been re-classified to coincide more closely with a process or processes that generated the waste disposed at a certain type of land-based disposal unit, e.g. burial ground, crib, pond. Under the current OU structure, waste sites associated with a given OU can be physically located at disperse locations within a particular NPL site. For example, waste sites associated with the MG-1 OU occur in various locations throughout the 200 East and 200 West areas.

Some source and groundwater OUs already have a **Record of Decision (ROD)** issued by EPA that authorizes implementation of either an interim remedial action or a final remedy. Other OUs are still being investigated (characterized by various means) to gather the information needed to decide whether some immediate but interim action is required to remove or contain contamination that poses a threat to human health or the environment.

Wastes from activities at OUs with RODs are typically managed in accordance with a **Waste Management Plan** (WMP). The WMP describes the activities and the waste streams expected to be generated as a result of performing those activities. WMPs are approved by DOE and the Lead Regulatory Agency (EPA or Ecology).

Wastes from activities at OUs for which a ROD has not yet been issued are managed in accordance with a **Waste Control Plan** (WCP). The WCP functions the same as a WMP but governs the management of waste associated with activities like well drilling and characterization that generally precede EPA issuance of a ROD.

WMPs and WCPs are typically OU-specific, although exceptions occur when a given activity like geophysical logging or well decommissioning which each generate waste streams with little significant variability, occurs at multiple OUs within an NPL site (100-Area, 200-Area or 300-Area).

New work that will generate waste should not be started until that new work scope and expected waste stream(s) is covered in the applicable OU WCP or WMP. For example, new wells or well decommissioning should not occur until the applicable well ID or well name has been included in the well list that appears in the waste plan.

Wells that already appear in WMP or WCP well list also appear on **Well Waste Spreadsheet** that is accessible from a link within the CHPRC website for the Soil and Groundwater Project. The Well Waste Spreadsheet is updated every time a well is added to waste plan although some lag time is not uncommon as the updates must be manually entered in the spreadsheet. The Well Waste Spreadsheet is a tool intended to be used by those working in the field so they don't have to carry with them binders full of OU-specific waste plans.

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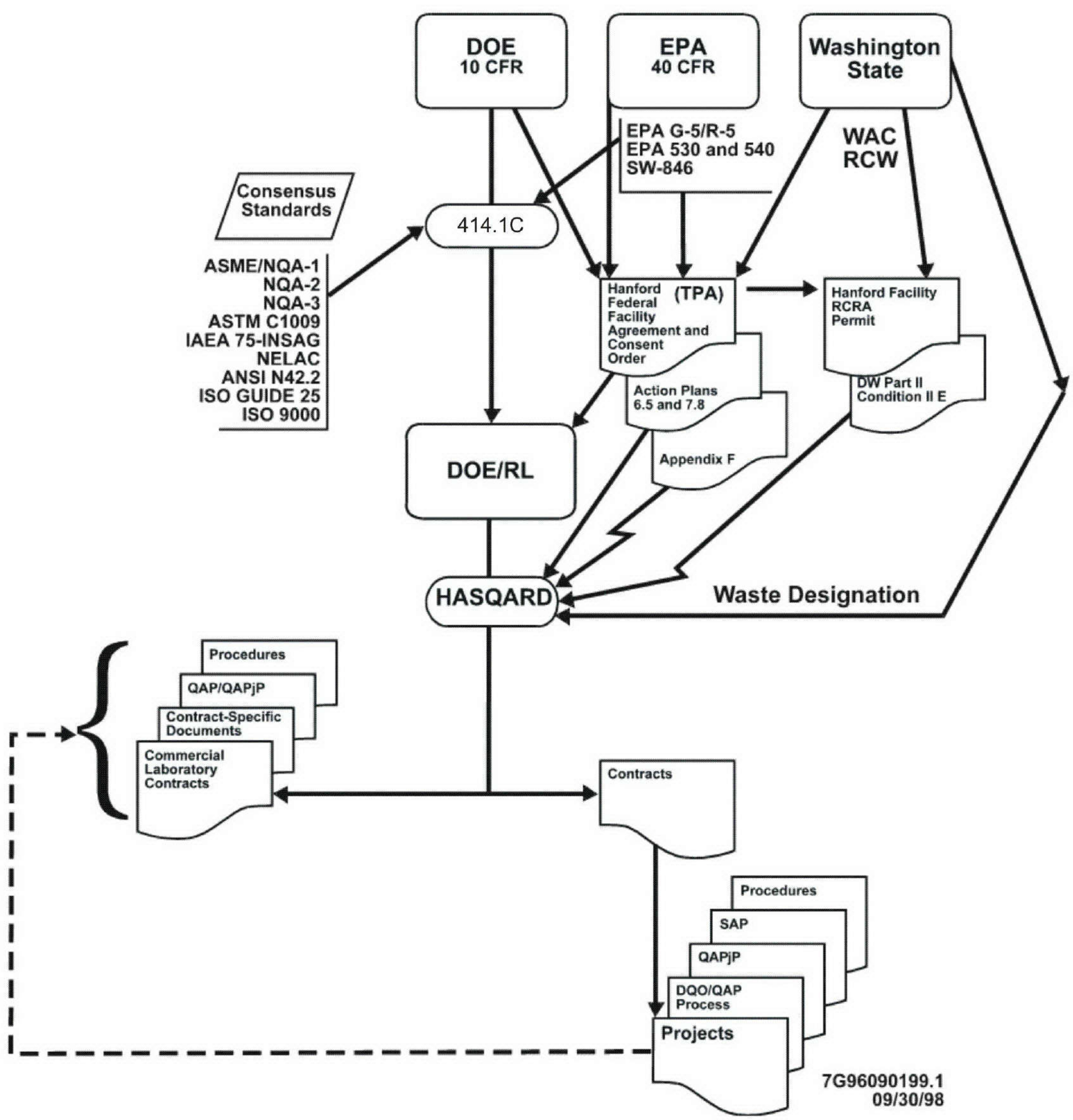
OBJECTIVE #2 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

To bring all of the regulations and requirements into a single source document the Hanford Analytical Services Quality Assurance Requirements Document (HASQARD) was developed.

Document Hierarchy Flow Diagram



HASQARD

DOE/RL-96-68, *Hanford Analytical Services Quality Assurance Requirements Document* (HASQARD) is designed to meet the quality requirements of DOE Order 414.4C, by maintaining a consistent level of quality for sampling and analysis services provided by contractor and commercial analytical laboratory operations.

The HASQARD is a four volume document whose purpose is to document Hanford site specific requirements relating to:

- Volume 1 - Administrative requirements - such as Data Quality Objectives, procedures, corrective actions, software, records management, etc.;
- Volume 2 - Sampling requirements - such as field logbooks, sample storage, field QC, etc.;
- Volume 3 - Field Analytical requirements - such as field measurement calibration requirements, QC, and data handling;
- Volume 4 - Laboratory Analytical requirements - such as chain of custody, calibration, QC, data handling, and recordkeeping

The Document Hierarchy Flow diagram shows how federal and state regulations get into project procedures. Why is this document important to us? The HASQARD defines the requirement for personnel to have specific roles and responsibilities. The major responsibility for operators is to ensure the work they perform meets the quality requirements identified within the HASQARD as follows: "*2.2 STRUCTURE, RESPONSIBILITY, AND AUTHORITY; All personnel (e.g., samplers, field analysts, laboratory technicians, scientists, researchers, principal investigators, operators, craftspeople, clerical/support staff, and internal auditors) shall retain responsibility for the quality of their work.*" The processes used to ensure we meet all applicable quality requirements are identified within the Quality Assurance Project Plan (QAPjP) CHPRC-00189. This is the quality assurance project plan for S&GRP. The QAPjP defines the processes used by the S&GRP to produce quality data and assure operations are fully compliant with all applicable quality affecting requirements. These requirements then flow down into the procedures used to conduct S&GRP activities. By complying with these procedures the project and personnel assure all quality requirements are implemented and met.

The bottom line is that by following project procedures you will meet your roles and responsibilities, as identified and approved by management, to conduct quality work in accordance with all applicable federal regulations and state laws.

Regulations/Requirements in the HASQARD

The following provides a brief description of the applicable documents and regulations which apply to S&GRP activities.

Sampling Fundamentals

SW-846

SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, provides test procedures and guidance which are recommended for use in conducting the evaluations and measurements needed to comply with RCRA. These methods are approved by the EPA for obtaining data to satisfy the requirements of 40 CFR Parts 122 – 270. All laboratories use these processes as written to provide a consistent process for all analytical activities so variances are not introduced.

This manual presents the routine analytical tests adapted for the RCRA program. It contains procedures for field and laboratory quality control, sampling, determining hazardous constituents, determining the hazardous characteristics (ignitability, corrosivity, reactivity, and toxicity), and for determining physical properties of water and wastes. It also contains guidance on how to select appropriate methods.

SW-846 is a multi-volume document that changes over time as new information and data are developed. Advances in analytical instrumentation and techniques are continually reviewed by Office of Solid Waste (OSW) and incorporated into periodic updates to SW-846 to support changes in the regulatory program and to improve method performance and cost effectiveness. To date, EPA has finalized and fully integrated the manual and contains approximately 3500 pages.

Quality Control/Quality Assurance Standards

Field Quality Control

Field quality control evaluations are routinely performed as part of the overall sampling and analytical laboratory quality control program. Field QC samples include field duplicates, split samples, and three types of field blanks. The three types of field blanks are full trip, field transfer, and equipment blanks. Field duplicates estimate precision, including sampling and analytical variability. Split samples estimate precision including sampling, analytical, and inter-laboratory variability. Field blanks assess overall contamination introduced during the sampling, transportation, and analysis processes.

The Soil & Groundwater Remediation Project implements the Quality Assurance Project Plan (CHPRC-00189) to ensure the quality of the data generated by S&GRP. This document, which gets its basis from the HASQARD, covers requirements for training, field QC, records, work process (including data quality requirements, sampling, chain of custody, analytical methods, and data handling), design, procurement, inspections and tests, and assessments. Quality assurance requirements for field sampling and field measurements are defined in this document.

Field QC is critically important to assessing the accuracy and precision of data generated from samples collected in the field. The summary below describes the types of field QC used by S&GRP and their purpose. The required frequency for field QC can be found in the QAPjP (CHPRC-00189). Specific instructions on the preparation and handling of field QC samples are also provided below. Alternative QC may be required when sampling for other projects, for example, ERDF. In those cases, the QAPjP of that project applies. If there are any issues, questions, or comments regarding field QC, notify the Sample Management and Reporting (SMR) Analytical Support Group, Field QC Point of Contact.

Equipment Blank (EB)

A sample that contains UHPW and preservative or silica sand is an Equipment Blank (EB). The EB is analyzed for all constituents scheduled for the sampling event. EBs are used to evaluate the effectiveness of the cleaning process and to ensure samples are not cross-contaminated from previous sampling events. To fill an equipment blank, run UHPW water through the portable pump and equipment (new or used) and collect the samples the same way field samples are collected. If volume required prohibits the use of UHPW (such as with portable Grundfos pumps), HPW may be used. If using sand, pour silica sand through the sampling equipment. Deliver to the laboratory with the field samples.

EBs are required when non-dedicated sampling equipment is used (both new and decontaminated). These could include but are not limited to portable Grundfos pumps, Kabis bailers, split spoons, or liners. The SMR group will transmit a request for the collection of EB's to the sampling group. Appropriate sample set paperwork will be provided to the sampling group. Some CERCLA projects require an EB completed whether there is a portable pump or not. The EBs are collected when directed. If the equipment being used for an EB is brand new, that should be noted on the paperwork.

A. Full Trip Blank (FTB)

A Full Trip blank (FTB), also known as "Trip Blank (TB)" and previously referred to as "Daily's" for VOA sampling is a sample that contains UHPW and preservative (or silica sand) as required which makes the entire sampling trip. A Full Trip Blank is collected in the sample preparation laboratory prior to sample collection. The FTB bottles are sealed and transported to the field in the same storage container that will be used for the samples collected that day. Note: If a large number of samples are taken, multiple storage containers may be used. The FTB is not removed from the storage container until it is delivered to the laboratory. The FTBs are used to evaluate potential contamination of the samples due to the sample bottles, preservative, handling, and transportation.

The SMR group determines which wells will have an associated FTB. That information is reflected in the sample set paperwork.

A set of bottles are to be filled using the Milli-Q system at the 5 bay before going to the sample site. Fill the bottles just as if sampling a well. Place the bottles on ice and carry with you the rest of the day. Do not open these bottles in the field. Deliver the FTB to the laboratory with the field samples.

Special Instructions for LL Tritium Full Trip Blank Preparation - Because of the low detection levels that can be achieved in the Low Level Tritium analysis, special water must be used. The dead water is collected yearly, or as needed, from well 699-S11-E12AP and stored at the 5-bay in the sample storage area. When a TRITIUM_ELECT_LSC is requested, using a peristaltic pump, fill only the TRITIUM_ELECT_LSC bottles out of the 5 gal glass jugs

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containing the dead water. Do not use this water for any other analysis except for full trip blank TRITIUM_ELECT_LSC. Note on the GSR that the dead water was used for the TRITIUM_ELECT_LSC sample.

B. Field Transfer Blank (FXR)

A Field Transfer Blank (FXR), also known as a "Field Blank (FB)", is a sample that contains only UHPW (or silica sand) which is filled at the time and place of sample collection. The FXRs are used to evaluate for potential contamination of the samples during the sampling activity.

At the time of sample collection, the field trip blank is filled at the sampling site by pouring UHPW from a cleaned container into Volatile Organic Analysis (VOA) vials. After collection, the field transfer blank is treated in the same manner as the other samples collected during the sampling event.

Field Transfer Blanks are typically collected only on days when samples are collected for a VOA (one per day for groundwater, one per borehole for characterization). The sample set paperwork for FXR's may not specify which well is associated. The sampling group will determine which well is selected for an FXR each day that sampling for VOA's is occurring. If the paperwork specifies a well or borehole, that location must be used.

In the morning fill a certified 250-mL aGs bottle from the Milli-Q-system. The 250-mL bottle must have a positive meniscus. Transport the water with the sample bottles. Transfer the water into the VOA FXR sample bottle at the wellhead just before collecting the regular samples taking care that no air space is left in the bottle. If conditions change from when the FXR is collected and the regular sample is collected make a notation on the GSR. Example of a change would be a wind change that takes exhaust fumes from the truck and blows them over the sampling area after the FXR is collected. For groundwater, the well that the FXR is completed at is written on the top of the FXR GSR and the FXR number is written on the top of the well GSR. This information is also entered into the Dailies database.

A message stating the reason needs to be sent to QC Point of Contact if a FXR is missed. This information is included in the quarterly report evaluation of field QC samples.

C. Field Duplicate Sample (DUP)

A Field Duplicate Sample (DUP) is a sample used to determine repeatability of an analytical measurement on identical samples collected as close as possible to the same time at the same locations. Soil samples are homogenized, and duplicates sub-samples are taken from the homogenized samples. VOA duplicates are collocated as defined below. These samples are stored in separate containers and analyzed independently by the same laboratory. The field duplicates, also known as replicates, are used to determine the precision for both sampling and laboratory measurements.

The SDR group determines which wells will have an associated duplicate. That information is reflected in the sample set paperwork.

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When sampling a duplicate, fill the like analyses together so that they are filled one right after another. An example order for filling bottles would be:

- VOA
- VOA DUP
- ABN
- ABN DUP
- Anion
- Anion DUP
- ICP
- ICP DUP

Sampling this way provides better representative sampling than filling all of the regular samples assigned to the well and then filling the duplicate samples. When sampling soil, duplicates (except VOAs) must be collected and homogenized before dividing into two samples in the field. Samples for volatile organic analysis are not homogenized. Two samples are collected as close as possible to the same point in space and time and are intended to be identical.

Collocated Samples – Per HASQARD, DOE/RL-96-68, these are independent samples collected as close as possible to the sample point in space and time, which are intended to be identical. Used where homogenizing samples for split or duplicates is not allowed (for example, for volatile organic analysis split and duplicates). S&GRP typically refers to collocated samples as "duplicates" or "splits."

D. Splits (SPLIT)

A sample used to determine repeatability of an analytical measurement provided by different laboratories on identical samples collected as close as possible to the same time at the same locations. These samples are stored in separate containers and analyzed by different laboratories. Coordination and number of split samples and collection days will be transmitted by the QC Point of Contact or designee to the sampling group. Collect SPLIT samples as you would a duplicate sample. Then deliver to the appropriate lab. SPLIT samples are inter-laboratory comparison samples. They are used to evaluate potential biases between laboratory measurements.

E. Blind Sample

A Blind Sample (BLD), also known as a Field Matrix Spike, is a sample that contains a concentration of analyte that is known to the supplier but unknown to the analytical laboratory. Groundwater blind samples are typically groundwater to which known amounts of analyte have been added. Soil blind samples are typically purchased solid samples with certified values for analytes that has been repackaged to look similar to soil samples. The analytical laboratory is not informed that the sample is a QC sample. Coordination of number of samples and collection days will be transmitted by the QC Point of Contact or designee to the sampling group. Appropriate sample set paperwork will be provided to the sampling group. These samples are critical to ensuring the quality of data received from the laboratories. Known amounts of analytes are spiked into groundwater to ensure the laboratory is producing accurate data results. ***It is essential that the blind samples appear as normal groundwater or soil samples to the laboratory. Any indication that these samples are QC can compromise***

the validity of the data.

The following steps outline the process for handling and dispositioning blind samples:

1. FWS provides COC for the blind samples to the NCO
2. NCO collects empty sample bottles – no preservatives are added to the bottles.
3. Make copies of original COC, creating "new originals".
    a. The original COC is retained by the FWS.
4. Empty sample bottles are prepared with pre-printed sample labels.
    a. Do not fill in time, date, or collector information at this time.
5. Empty sample bottles and the "new original" COCs are delivered to the lab (e.g. 222-S, 329 lab) performing the matrix spike.
    a. No signatures are required. Custody is not being transferred (empty sample bottles are not being tracked at this time).
6. After the lab has prepared the Blind Matrix spikes, custody is transferred from the lab to the NCO using the "new original" COCs.
7. The "new original" COCs are completed by the NCO and dispositioned to the SMR.
8. The NCO obtains the original COC from FWS.
9. NCO completes original COC, GSR and Sample container labels - simulating one sampling event, indicating same date, same time, and same collector for all bottles. **NOTE: Blinds must not appear as though they have come from the laboratory. Blind samples must appear as if collected at a sampling event.**
10. Blinds samples are grouped to each COC packaged and delivered as required to the proper lab.
11. Samples are delivered and COC is dispositioned according to standard practice/procedure.

F. Bottle Certificate

Each lot of certified pre-cleaned bottles will have a certificate of analysis (COA) associated with it. The certificate must be retained as a record. Bottles used for sampling must be traceable to the lot and certificate. This ensures that if contamination is identified in a lot of bottles, all affected bottles can be identified and removed from the sampling process.

Preservation Certificate

Each lot of chemical used as preservative will have a certificate of analysis (COA) associated with it. The certificate must be retained as a record. Preservatives are tracked by lot number, date of receipt, and date opened.

G. Field QA/QC Reviews

The groundwater project's criteria for evaluating the analytical results of field QC samples are as follows:

- Field Duplicates – Results of field duplicates must have precision within 20%, as measured by the relative percent difference. Only those field duplicates with at least one result greater than five times the method detection limit or minimum detectable activity are evaluated.

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- Split Samples – Results must have a relative percent difference ≤20%. Only those results that are greater than five times the method detection limit or minimum detectable activity at both laboratories are evaluated.
- Field Blanks – For most chemical constituents, results above two times the method detection limit are identified as suspected contamination. However, for common laboratory contaminants such as acetone, methylene chloride, 2-butanone, toluene, and phthalate esters, the limit is five times the method detection limit. Results for metals are flagged if they exceed two times the method detection limit. For radiological data, blank results are flagged if they are greater than two times the total minimum detectable activity.

If a field blank does not meet the established criteria, it is assumed that there are potential problems with the data for all associated samples. Data associated with out-of-limit field blanks are flagged with a “Q” (refer to Table 1) in the database, to indicate a potential contamination problem. A “Q” is also applied to both duplicate results when their precision exceeds the QC limits.

Instrumentation Calibration Solutions

Buffer and conductivity solutions used to standardize and check instruments require certificates of analysis.

Pre/Post Sampling Documentation

It is important to remember that the information collected from the sampling activities is not complete until the proper documentation is correctly completed and disposition to the correct individuals. These documents need to be of a quality that they could reconstruct a sampling event years after the sample was taken. The forms used for data collection during sampling are record copies and are never to be discarded.

OBJECTIVE #3 –SAMPLING DOCUMENTATION

Objectives:
Identify the purpose of each of the following documents:

- Sample Analysis Plan (SAP)
- Sample Authorization Form (SAF)
- Chain of Custody (COC)
- Certificate of Analysis (COA)
- Explain why a chain of custody is important to the integrity of a sample.

For purposes of this training each of the documents are being identified in a general way to describe what they primarily accomplish. There will be slight differences in the way they are used by various S&GRP organizations. These differences will be clarified in the On-the-Job training.

Sample Analysis Plan – (SAP)

Purpose

Provides an introduction and background of the project, establishes a quality assurance plan. The plan outlines field sampling, sampling methods, the equipment required, analytical methods, health and safety. For characterization - this document provides the hydrology and geology map of the well drilling project.

Application/uses of SAP

The SAP is used by technical support to develop the Sample Authorization Form (SAF) and Chain of Custody (COC). The SAP should be provided to the operator prior to the beginning of the project “kick-off” by the Fieldwork Supervisor (FWS).

Sample Authorization Form - (SAF)

Purpose/Requirements

The SAF provides authorization for the S&GRP organization to perform requisite sampling activities as identified within the SAP. The SAF also identifies the following: contracted laboratories, project number/title, analytical methods, containers, preservation, hold times, charge codes, etc.

Uses of SAF

Operator reviews the SAF and compares it with the COC, to ensure consistency and accuracy. Items verified are laboratories, required sample containers, etc. The SAF number directly correlates with the COC, as the prefix number of the COC (first 6 numbers) is derived from the SAF number. This ties all the samples and COCs to a Sample Authorization Form (SAF) and charge code.

For characterization activities, the first letter represents the company. Central Plateau (F), CH2M-Hill (V), PNNL (I), CH2PRC (W). For groundwater activities, the first letter represents a financial fund allocated to the sampling activity as follows: (A) Performance assessment by AEA; (G) rebound study for NR-2; (I) Letter of Instruction for closely watched CERCLA activities; (S) CERCLA activities; (W) RCRA activities; (X) Special Studies

The next two numbers are the fiscal year, representing when the SAF was approved.

The next three numbers are a unique ID for the SAF, incrementing sequentially throughout the fiscal year and this number resets to zero each fiscal year for characterization activities.

For groundwater activities these three numbers indicate the month (001 – 012) in which the SAF was created. However, if it is an I or X SAF then it is just the numerical order in which it was created.

Disposition

The original SAF is maintained with Sample Data Management (SDM).

Sample Matrix

Purpose

The MATRIX is used when performing sampling at boreholes.

Uses of Matrix

Matrix is used to compare sample #'s, intervals, Well ID, laboratories with the COCs. The Matrix informs the operator what to expect during the drilling operation such as soil, water, QC requirements (etc.). Basically the Matrix informs how sampling will characterize the borehole. The actual depth, sampling method, date and time is noted (by the NCO) on the Matrix for each interval. At times a sample interval may not be obtained, due to limiting conditions.

Disposition

When all sampling of this borehole has been completed then the MATRIX is given to the supervisor for review.

COC (Chain of Custody) Documentation

Purpose

Per the HASQARD (Vol II, 4.4) a Chain of Custody is a chronological document indicating the seizure, custody, control, transfer, analysis, and disposition of sample and/or chemicals.

A major consideration for the legal credibility of analytical data generated from a field sampling activity and subsequent sample analysis is the ability to demonstrate that samples have been obtained by the sampling group and have reached the laboratory without alteration.

Evidence of collection, temporary storage, and shipment to the laboratory shall be documented. Documentation is accomplished through chain-of-custody procedures and records that describe and document how physical custody is maintained, how custody is transferred, who are the individuals responsible for sample collection, and what is the process for processing, shipment, storage, and disposition.

- A sample is considered in custody if it is in the person's actual possession, is in view after being in physical possession, is locked so that no one can tamper with it after having been in physical custody, or is in a secured area restricted to authorized personnel.
- Because the COC can be considered legal evidence, it must be handled in a conscientious and careful manner to avoid later allegations of tampering or misconduct which can compromise the validity of the tracked item(s). **One way non-tampering is demonstrated is through the use of evidence tape on the samples collected.** *The evidence tape is placed around the closure of the sample container to provide evidence the container was not tampered with during routine handling activities. It should be placed such that the container closure cannot be removed without damaging the closure tape.*

  In some instances custody tape placed directly on the sample container will damage the laboratory's auto sampling equipment. Therefore samples taken for VOA analysis should be placed in a secondary plastic bag with custody tape sealing the bag. Or the custody tape may be placed directly around the VOA vial cap. Remove the protective cap prior to applying the custody tape on the VOA vial.
- The original Chain of Custody (COC) always stays with the sample. Sample possession may be signed over to another person or to a Sample Storage Unit (SSU). Whenever sample custody is transferred via the COC the original COC stays with the sample and the relinquishing person is required to get a copy of the signed COC. This is a critical document so double checking and peer reviews will help to avoid mistakes. After relinquishing custody and obtaining a copy of the completed COC, the copy of the COC is turned into supervision or their administrative delegate.

Disposition of COC forms

COCs arrive to the field with pre-printed labels - this excludes Multi-Media sampling. When the labels are applied to the containers the original COCs remain with the samples, even as they are shipped to the lab. Make copies of all COCs that are pre-approved for offsite shipment. Copies of the COCs are submitted to Sample Data Management.

Originals always stay with the samples. Copies are submitted with a sample only in the case where split samples are generated. Then the original is copied and the copy is dated and signed to be a true copy. This then becomes the original for that set of samples.

Information required on COC from NCO.

Collector (Name of sampling NCO), Sample Date, Sample Time, Relinquished By, Date/Time, and Received By, Date/Time. Other details regarding the COC will be covered in their respective certification training!

Sample Reports: Groundwater, Liquid, Vapor, and Solids

Purpose

The sample reports provide a consistent process of documenting the data obtained when sampling groundwater (GSR), other liquids (LSR), vapors (VSR), and solids

(SSR). The GSR has been used successfully by Groundwater Monitoring for a number of years. When implemented it proved to be a great asset by minimizing any misunderstandings or misinterpretations between those wanting specific information and those conducting sampling activities. In 2008 this effort was expanded to include sample reports for liquids, solids, and vapors. This will provide operators with a consistent, standardized way of documenting what they need to know in order to properly prepare and take samples for analysis.

Application

Information provided/obtained from the report:

- Project #
- Sample location (i.e. vapors, drum location, etc.)
- Task order
- Well #
- Well type
- Pump type
- Sample #'s with their associated labs.

Information required from operator: (Examples – not all inclusive)

- water level
- E-Tape No
- Other field parameters as indicated by the report/form
- Field observations
- Well condition
- Pre-check/Post-check instrument readings
- sign/date the document.

General Requirements

Some very general but important quality requirements associated with sample reports include:

- A review of the Sample Reports is required – signed by the operator and reviewed by supervision (or delegate).
- Ensure that all fields on the form are marked - with either the requisite information or N/A if not applicable.

Examples of documentation

GSR– Attachment 1, LSR – Attachment 2, SSR – Attachment 3, VSR – Attachment 4

Data Forms (e.g. GSR, LSR, SSR, VSR, etc…)

It is often convenient to document field information on pre-printed data forms. A copy of any data form to be used with a detailed key/legend describing the content of each space or block on the form shall be included in the QAPjP and/or the procedure. As with logbooks, data forms shall be completed with indelible ink and may be considered a quality record; if so, they shall be maintained and stored as such.

Logbooks

Purpose of logbooks and data forms

Logbooks and data forms are means for providing a daily handwritten record of all sampling activities and are generally considered the primary record for sampling activities. Additionally, logbooks are to be reviewed weekly by supervision.

General Requirements (fundamental review)

All logbooks shall be permanently bound (do not use loose-leaf three ring binders), and field logbooks shall be waterproof. Logbooks shall be ruled with sequentially numbered pages. All logbook entries will be made in indelible ink. Corrections are made by marking the erroneous data through with a single line, entering the correct data, and initialing and dating the changes. Correction fluid and erasers are not to be used. Pages will not be removed from logbooks for any reason. Space left on pages should be lined through and initialed and dated. This indicates the completion of the entry and prevents non-related information from being added. Blank pages shall be marked "page intentionally left blank" or shall be lined through, initialed, and dated. Only authorized persons may make entries in logbooks.

The logbook or data form needs to identify:

- Which samples were sent where
- Which samples were sent to temporary storage
- All participants involved with the job are to be named and their actions that affect the job. Those include NCOs, HPTs, Teamsters, etc
- Phone calls related to and that effect sampling events
- Sampling procedures utilized (Procedure numbers are placed in the front of the logbook for all routine work. Any procedures used outside this list, must be within the logbook or dataform.)
- Sampling containers used and their volumes

Closeout of the daily log needs to include a date in two places. That is – a date entry in the logbook at the beginning of the day and then again at the end of the day.

HASQARD requirements (Vol II, 4.1.2)

Field logbooks contain area or task-specific information. In the case of small scale investigations, the field notebook may also serve as the site logbook. The field logbook cover shall indicate the particular tasks or areas within the site (or the specific individuals) to which the logbook is assigned. The field logbook may be identified as a quality record and if so, shall be maintained as such.

Information to be recorded in the logbook, as appropriate, include the following:

- The day and date, time the task started, weather conditions, and the names, titles, and organizations of personnel performing the task.
- The name, title, organization, and purpose of the visitor to the task area.

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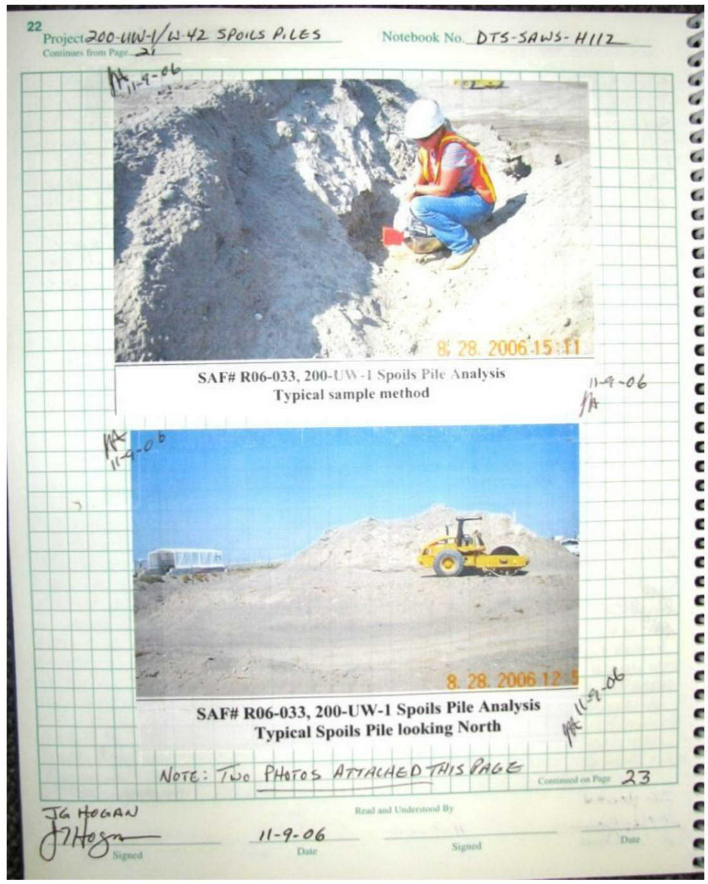
- Site activities in specific detail (e.g., maps and drawings) or the forms used to record such information (e.g., soil boring log or well completion log). It is good practice for the site engineer or geologist to duplicate the most important information in the field logbook and on data forms.
- Details of any field tests that were conducted. Reference any forms that were used, other data records, and the procedures followed in conducting the test. Results of any field activity shall be annotated in the field logbook.



- Details of any field calibrations and surveys that were conducted. Reference any forms that were used, other data records, and the procedures followed in conducting the calibrations and surveys. Results of any field calibrations and surveys shall be annotated in the logbook.
- Details of any samples collected and indicate the preparation, if any, of splits, duplicates, matrix spikes, or blanks. Reference the procedure(s) followed in sample collection or preparation. List location of sample collected, sample type, all label or tag numbers, sample identification, sample containers and volume, preservation method, packaging, chain-of-custody form number, and the analytical request form number pertinent to each sample or sample set. Note the time and the name of the individual to whom custody of samples was transferred.
- The time, equipment type, and serial or identification number, and the procedure followed for decontaminations and equipment maintenance carried out. Reference the page number(s) of any logbook (if any) where detailed information is recorded; detailed information shall otherwise appear in the field logbook.
- Any equipment failures or breakdowns that occurred, with a brief description of repairs or replacements.
- The sampler or task leader shall review and sign the field logbook.

Special Note: S&GRP uses a special waiver to logbook requirements in that we are allowed to copy, cut, and paste information, as well as pictures into a the field logbook.

However, we must ensure we follow certain specific requirements to maintain the integrity of the record. This includes:

- Any objects taped into the logbook must be taped completely around the object
- The corners, at least two, must be dated and initialed by the person such that the date and initials run from the taped surface to the paper surface of the logbook (off the tape)

Sampling Fundamentals

- Below the taped item(s) you must place a note stating how many items are taped on the logbook page.

Examples of logbooks/notebooks

Project assigned, including field characterization:
Bore Holes, Drill sites, waste sites, drums, multi-media, specific/unique jobs

Field Monitoring Logbooks
Routine groundwater sampling

Equipment/Maintenance
Millipore, cleaning station,

Sample Storage Units

Sampling Fundamentals

OBJECTIVE #4 – SAMPLING CONTAINERS

Objective:
- Identify each type of sample container and describe the use for each.
- State the purpose for ensuring sample containers have an associated lot number.

Bottles

Bottle selection – bottles are actually selected by the laboratory based upon their analytical requirements for a sample type. The COC/GSR/LSR/etc. will identify the type and size of container to be used. Sample Containers

Aqueous samples for toxicity testing may be collected and shipped in plastic bottles. Amber Glass bottles are recommended for samples to be used for organics analyses. High density polyethylene containers are needed when metals are to be analyzed. Metals can adsorb to glass and also new glassware may have zinc contaminants. Polyethylene is not recommended when samples are contaminated with oil, grease, or creosote.

Bottle type terminology and abbreviations used (reference COC)

Key to container types as shown on a SAF includes:

Nalgene™ / Lexan plastic
aG – Amber Glass
aGs – Amber Glass with septum cap
aGs* – Amber Glass with septum cap – no headspace in container (with meniscus)
aG/T – Amber Glass with Teflon Lined Lid
P – Plastic (Polyethylene)
G – Glass
Gs – Glass with septum cap
Gs* – Glass with septum cap - no headspace in container (with meniscus)

NOTE: May use amber glass (aG) in the place of glass or plastic, but not vice versa, aG is an upgrade (better). Before varying specified container, contact the FWS.

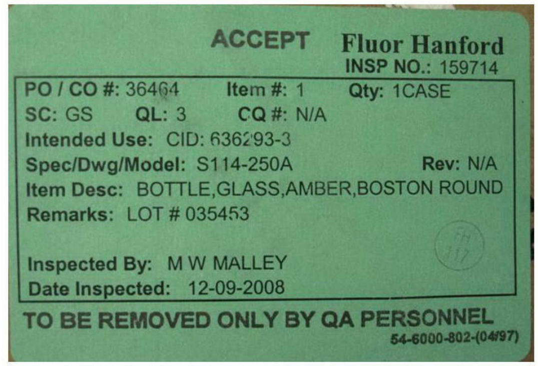
Sizes: typically vary from 20 mL to 4,000 mL

These also come with different size opening (e.g., normal width bottle opening for liquids and wide mouth for soils – however, wide mouths may be used for liquids as well). As a best work practice, avoid using wide mouth for liquids as they have a history of leaking.

Sampling Fundamentals

Objective #4 – Sampling Containers

LOT Numbers



Purpose of logging LOT numbers – traceability – in the event a particular trait of a lot number is discovered it enables us to identify all samples which were affected by that particular lot.

Located on box/container and on container

- Green Label on box, bar-code label on container (example shown #035453)

Log the LOT numbers on GSR and/or COC

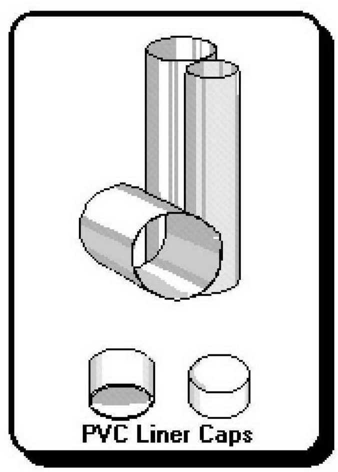
Tins

Are used for soils and moisture content analyses – they do not have to be certified clean and therefore, do not have a lot number associated with them.

Carboys

Carboys are usually made of plastic. They are used to collect large quantities of liquids. In these applications, a tap may be included for dispensing. Typical sizes range from 2-5 gallons.

Liners



Cylinders made of Lexan or stainless steel and are used to gather soil samples. The liners are the collected sample container. The open-ended liner is then capped on both ends to make a closed container. Liners are cleaned at the cleaning station, wrapped in foil, and custody is maintained. The stainless steel liners are able to be used over. The Lexan liners have the potential to easily break, therefore they are a one-time use only. The type of liner selected is determined by the project and based on whether they need to see the soil sample (stratification) as a whole or not. Solution can be poured through the material/soil in the Lexan liner, observing the penetration of the water through the media. More information regarding liner usage will be provided in the Borehole Certification training.

Sampling Fundamentals

Objective #4 – Sampling Containers

Tedlar bags

The containers are used to collect vapor samples. They have a valve on them which is closed to seal in the sample once collected. These are filled using a pump and are pressure-filled. They are reusable.

Summa canisters

The containers, made of stainless steel, come with a vacuum in order to pull a vapor sample into the canister. Can be used to sample open air for vapors or connected to another vessel to acquire a sample. The technique to be used is identified by the SAF.

Sampling Fundamentals

OBJECTIVE #5 – LIQUID & SOLID SAMPLING EQUIPMENT

Objective:

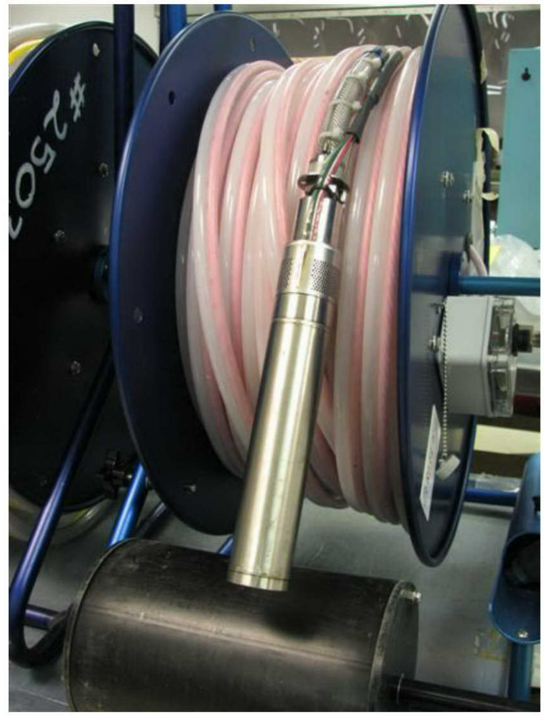
- Identify commonly used types of sample equipment.

Liquid Sampling Equipment

PUMPS		
Samplers	Application	Limitations
Electric Submersible Pumps	Boreholes, Well Development, Groundwater Sampling	• Hard to regulate flow rate (unless you use another manifold as a throttle valve). • Need power source to operate. • Inconsistent plugs and outlets.
Hydro-Star Pumps	Wells with limited water.	• Need compressor to operate. • Limited flow rate. Pinch points.
Portable Grundfos Pumps	Wells without pumps and piezometers	• Limited sampling depth. • Decontamination (cleaning) needed between wells. • Awkward to handle (weight plus reel up & down). • Control box needed for Redi-Flo II.
Redi-Flo II Redi-Flo III	Boreholes, Groundwater Sampling, Wells with limited water.	• Portable power source needed. • Limited sampling depth. • Control box needed for Redi-flo II • Different type of control boxes.
Airlift	Piezometers	• Needs air compressor. • Limited sample volume. • Time consuming.
Peristaltic	Variable speed collection, depending on pump head type. Used for both composite samples and individual samples aquatubes, N-Springs	• Will pull approx. 1 atm (26-ft.) • Difficult to obtain representative sample with immiscible phases. • Vacuum in tubing may cause outgassing of organics. • Pinch Points • Flow rate ~ 1 gpm

Sampling Fundamentals

Hydro-Star Pump Actuator



Portable Grundfos Pump

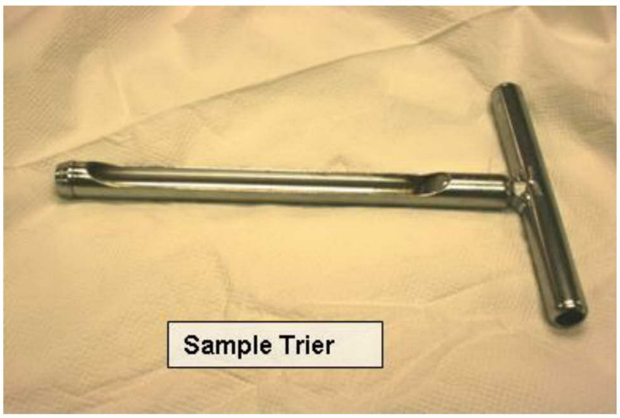
Peristaltic Pump

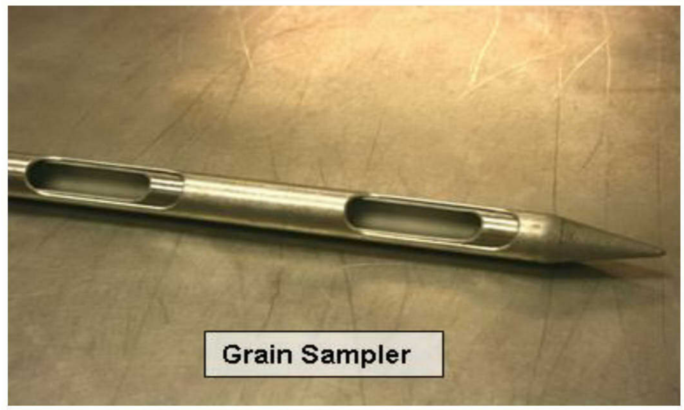
Sampling Fundamentals

Solids Samplers

SOLID SAMPLERS		
Samplers	Application	Limitations
Grain Sampler	Powdered or granular solids	• Maximum sampling depth approximately 3 feet. • Grains must be about the size of a grain of rice. • Limited application for sampling moist or sticky solids.
Sampling Trier	Preferred when powdered or granular material is moist or sticky. Soft or loose soil samples.	• Maximum sampling depth to about 2 feet. • Difficult to retain core sample of very dry granular materials.
Trowel or Scoop	Dry, granular or powdered material or surface soil collection. Material consisting of large particles.	• Maximum sampling depth approximately 3 inches. • Trowel subject to corrosion or reaction with materials being sampled. • Difficult to obtain reproducible mass of samples.
Soil Auger	Soil samples 3 inches or deeper.	• Maximum length about 6 feet. • Cutting diameter about 2 inches. • Does not collect undisturbed core sample.
Drum Sampler	Waste pile and granular or powdered material.	• Maximum sampling depth approximately 4 feet. • Unable to sample solid material with dimensions greater than half the diameter of the sampling tube.
Split Spoon	Collects relatively undisturbed soil samples at depth.	• Must use in conjunction with a truck mounted drill or soil auger. • Maximum sampling depth limited to capability of drilling rig.

Sampling Fundamentals





OBJECTIVE #6 –PRESERVING SAMPLE BOTTLES

Objectives:

- State the purpose of preserving bottles.
- Identify the primary chemicals used to preserve bottles.
- Explain how and why preserved bottles are controlled.
- Identify the types of equipment used to dispense preservatives.
- Discuss the difference between nitric acid and ultrex nitric acid including when/why each is used.
- List the minimum personal protective equipment required during bottle preservation activities.
- Given any ampoule used for post-preservation of samples, explain what the nomenclature on the labels means.

Purpose of preservation (HASQARD Vol II, 4.2.2)

Ensure the quality of the samples obtained and to help slow the degradation process within the sample. The intent of preservation is to maintain the sample's integrity by achieving the following:

- Retard biological action
- Retard hydrolysis and radiolysis of chemical compounds and complexes
- Reduce volatility of constituents
- Reduce absorption and adsorption effects.

Preservation methods generally are limited to pH control, chemical addition, refrigeration, and freezing. The actual chemical used in preservation will be identified on labels, the sample report, and the Chain of Custody. The preservative to be used is based upon the type of analysis information the scientist/individual requesting the samples needs to obtain.

Preserved Bottle Control

Preserved bottles must be controlled in such a manner as to prevent tampering with the prepared sample bottles. Normally, this is accomplished by locking the bottles in a secure location or in a sample vehicle which is locked when not attended.

Bottles Prepared for Other Organizations

Bottle preservation procedure (GRP-FS-04-G-015) is used to accomplish this task. **See Attachment 10 for COC**

Sampling Fundamentals

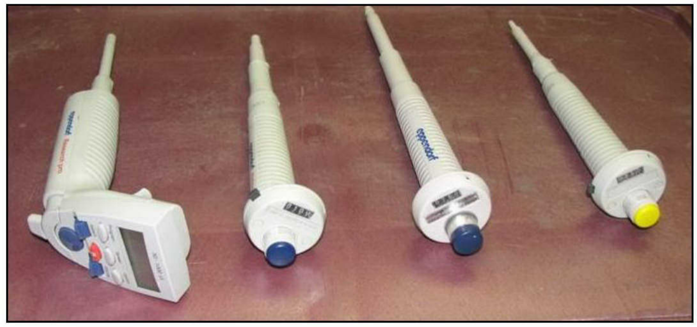
When preparing bottles for other organizations we will be using our in house Chain of Custody (COC). This COC is not on site forms and is kept in a filing cabinet by the FWS and is specified for use by the FWS. Instruction for this form is given by the FWS.

Tools/Supplies for Preservation

Purpose of metered dispensers - Provides repeatability of dispensing small/accurate amounts of preservative into sampling containers.

a) Eppendorf metered dispensers

- Four models of Eppendorfs are in use, with each one having its own function and operational abilities.
- Some models operate using battery power (electronic) and others are manually operated (mechanical dials).
- Amount to dispense is determined by a setting on the dispenser.



b) Pipette tips

Disposable tips used with the Eppendorf dispenser. These are replaced with a clean tip for each reagent that’s used.

c) Metered reagent dispensers

- Pump dispensers sitting in plastic racks/holders
- Amount to dispense is determined by setting on the dispenser.

Sampling Fundamentals

Ampoules

Used for preservation in the field. Ampoules are premeasured and contain a small amount of preservative in a sealed vial/container.

Ampoules are purchased in different volumes with different reagents at different concentration levels to meet field preservation requirements.

The label on the ampoule identifies the ratio of chemical to water in the ampoule. For example, a 1:1 HCl contains 1 unit of HCl for every unit of water in the total volume of the vial. A 2:1 HCl would have 2 units of HCl for every 1 unit of water. The total amount of liquid in the ampoule is noted on the box in which the ampoules are stored. **See attachment 6**

d) Preservatives:

All chemicals shall be stored in the proper chemical storage unit.

Unopened acids and bases shall be stored in their original containers, inside compatible chemical storage cabinets.

NOTE: Ensure acids and bases are segregated.

Sampling Fundamentals

Background on terminology:

Molar/Molarity - In chemistry, molar concentration, also called molarity, is a measure of the concentration of a solute in a solution, or of any molecular, ionic, or atomic species in a given volume. The molarity is the concentration in moles/liter. A 6 molar acid solution has a concentration of 6 moles of acid dissolved in a liter of total solution.

pH (potential or power of Hydrogen) – Potential hydrogen, a measure of acidity or alkalinity. The pH is defined as the negative logarithm of the hydrogen-ion concentration. The scale runs from 0, which is very strongly acid, to 14, which is very strongly alkaline. Pure water is pH 7, which is neutral; below 7 is acid, above is alkaline.

Below is a list of preservatives that are currently being used for preservation of samples:

- Nitric acid (HNO_3)
- Ultrex (Nitric Acid made using ultra pure water, so that trace metals are not present)
- Sulfuric acid (H_2SO_4)
- Hydrochloric acid (HCl)
- Sodium hydroxide (NaOH)
- Zinc acetate ($Zn[CH_3COO]_2$)
- Sodium thiosulfate ($Na_2S_2O_3$)

1. Large items should be elevated at least 2" from the hood base to insure airflow to the baffle opening at the rear interior base of the hood
2. Do not use the ventilation as a storage cabinet. Excessive storage can obstruct air flow and cause areas of low air velocity at the face opening.
3. Do not extend face or head inside the hood.
4. Minimize traffic and other sources of cross drafts (i.e. open windows, doors, fans, etc.) which may pull contaminated air from the hood.
5. When using electrical equipment in a hood take extra precautions to prevent spark sources from causing fire or explosion. All electrical connections should be made outside the hood.
6. Do not use perchloric acid heated above ambient temperature in a ventilation hood unless it is a specifically designed perchloric acid hood with a wash-down system.
7. Emergency plans should be understood by all hood users in the event of an unexpected occurrence such as fire or explosion in the hood.
8. If assistance is needed regarding the safe operation of a ventilation hood, contact the FWS.

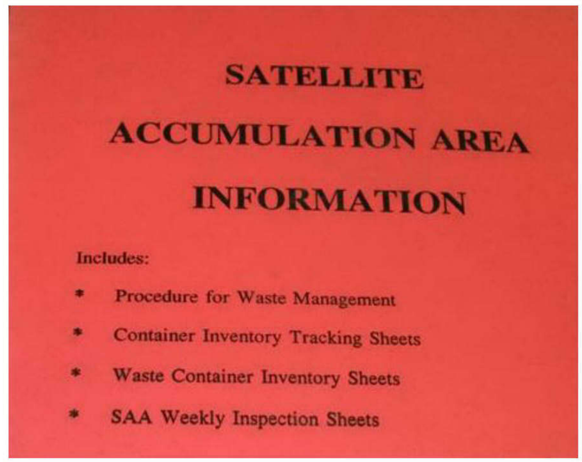
Sampling Fundamentals

a) Emergency Notifications:

In the event of a spill – first call 911 or 373-0911. Then notify management and facility building landlord.

In the event of a chemical exposure and/or contact, follow the recommendations of the MSDS, notify management, and report to Site medical.

Waste Management



Place applicable waste container in hood for preservatives to be used during bottle preparation (waste containers are located in satellite accumulation area) in an adjacent room.

A waste container is in place for each type of preservative and that the waste container must be placed in the hood prior to performing preservation. Waste containers are 4 liter amber glass containers with the chemical listed on the bottle. If the Satellite Accumulation Area (SAA) is full, contact your supervisor to get the SAA waste area properly prepared for further use. Full can be assumed to be stated as if the SAA container will not hold the amount of waste to be generated during the sample preservation activity. This is recommended to be no higher than the start of the shoulder of the container in order to allow room to add other chemicals for neutralization of the waste (in needed).

OBJECTIVE #7 – HIGH/ULTRA HIGH PURITY WATER SYSTEMS

Objectives:

- Identify the systems used to make laboratory grade water.
- Identify the grade of water used for most laboratory analysis/sampling and cleaning activities.
- Identify how the purity of water is measured and list the limit for high purity water.
- Describe why laboratory grade water is used during equipment cleaning and sampling activities.

High Purity Water (HPW-aka De Ionized Water)

Deionized water (HPW) which is also known as demineralized water is water that has had its mineral ions removed, such as cations from sodium, calcium, iron, copper and anions such as chloride and bromide. Deionization is a physical process which uses specially-manufactured ion exchange resins which bind to and filter out the mineral salts from water. Because the majority of water impurities are dissolved salts, deionization produces a high purity water that is generally similar to distilled water, and this process is quick and without scale buildup. However, deionization does not significantly remove uncharged organic molecules, viruses or bacteria, except by incidental trapping in the resin. Specially made strong base anion resins can remove Gram-negative bacteria. It should be noted that deionization does not remove the hydroxide or hydronium ions from water; as water self-ionizes to equilibrium, this would lead to the removal of the water itself.

Obtain rinse water for field decon

The cleaning station consists of exhaust hood, nine sinks, drying rack, a drying oven, and a supply of de-ionized (DI) water/HPW. The HPW is also used for rinsing equipment in the field and for this certification will need to be obtained to rinse off the E-tape in the field. The picture to the right shows the valves above the sinks for the cleaning process (Bld.6268). These valves are used to dispense HPW to the sinks. This is where we will be obtaining the HPW for our rinse water, which is obtained from any plastic container that is capable of containing water without leaking out of the container. When the valve is opened the water will flow from the valve. The Myron reading that is explained below is the indicator for the cleaning station as to the reading of the water in the HPW system.

Sampling Fundamentals

Ultra High Purity Water (UHPW)

For the purposes of S&GRP UHPW is synonymous with Type I water. This water undergoes an additional step of purification. The Milli-Q system as stated by the manufacturer produces Type I water, although this is not validated or tested as such.

Resistance/Conductance

The resistance of water purity is measured in ohms-cm. The inverse of resistance is conductance. By measuring the resistivity of Ultra High Pure Water (UHPW) we can convert that to the conductivity of the water. The **siemens** (symbol: S) is the SI derived unit of electric conductance. It is equal to inverse ohm [1 S = 1/ohm]. UHPW is defined as having at least 18.0 megaohms-cm [0.056 microsiemens/cm].

Components of the Millipore Water System (MWS)

The high purity water purification consists of three systems. In order of water flow, they are:

- Milli-RiOs is a reverse osmosis filter
- Milli-Q Biocel final filter

Purpose of the Milli-RO and the Milli-Q components.

The combination of the Milli RiOs and the Milli Q biocel units provides laboratory Type I water, "**ultra high purity water**" with a desired final resistance value of 18.2 meg-ohms (MΩ), which is monitored as it is being dispensed at the Milli-Q. This ultra high purity water is used to meet QA/QC requirements for sampling. Ultra high purity water is used to fill Equipment blanks, FXR's, Field Trip Blanks, Dailies, etc. This water may be used to clean or rinse equipment, but it is preferred that high purity water, which is much easier to acquire in the large quantities be used to rinse equipment.

It is critical to leave the Milli-RO in the operate mode 24/7. If turned off for more than 24 hours, the automatic flush will not function which causes the wet side of the pretreatment pack to become unusable.

HASQARD requirements (Vol II, 5.0)

Each sampling and/or analysis organization is responsible for ensuring that the water used for data collection activities is of sufficient quality for the operation performed. Water quality is regularly monitored via preparative and analytical blank performance. The concentration of target analytes or interferences in the blanks shall be at a level that will not impact the results when using a particular analytical method.

Sampling Fundamentals

Operation of the Milli-RiOs

The Milli-RiOs provides at least 10 liters/hour of laboratory-grade water that is low in ionic, organic, and particulate contamination. The Milli-RO 10 system uses Reverse Osmosis (RO) as a primary purification technique.

This is always left on (i.e. in the operate mode). When the system is turned on, the Milli-RO automatically flushes water across the RO membrane every 3 hours for a 5-minute period. During this period, the display intermittently reads FLUSH and then the system mode.

DO NOT turn the Milli-RiOs unit off. It must always be left in the Operate Mode. If turned off, will not function properly because the wet side of the pretreatment pack becomes unusable..

Operation of the Milli-Q Biocel

Pressing **OPERATE/STANDBY** keypad for at least 2 seconds will switch the display between the PRE-OPERATE and the STANDBY mode.

- When in the PRE-OPERATE mode the system will re-circulate water for 5-minutes each hour.
- When in the STANDBY mode system operation is not possible. Automatic re-circulation does not occur in this mode.
- The 18.2 MΩ-cm automatically occurs from PRE-OPERATE mode when point of use trigger is moved forward. This is referred as PRODUCT mode.

Upkeep of the MilliPro system

Milli-Q

A regular sanitation of the Ultrafiltration (UF) cartridge is necessary to obtain the best water quality and to have the maximum life of the UF module. The Milli-Q system will periodically display every two weeks the message “START SANIT” to inform user sanitation is necessary.

If any of the following messages or other error messages appear on the LCD screen or problems develop with the Milli-Q - **do not collect water, STOP and notify FWS:**

- EXCH. CARTRIDGES
- START SANIT.
- EXCHANGE UV LAMP
- EXCHANGE A10 UV

Milli-RiOs

The AUTO CLEAN button on the control keypad allows you to routinely run the RO cleaning cycle at the touch of a button. During this 15-minute cycle, the display reads CLEANING CYCLE.

OBJECTIVE #8 –SAMPLING FIELD INSTRUMENTS

NOTE: This training section will not qualify an operator to checkout and/or utilize the equipment in the field. The following material provides an overview of the instruments to know their purpose, their function(s), and to recognize the equipment. The tasks of checking the instruments out, the custodial requirements, the QA requirements and uses of the instruments will be included within their respective and applicable certifications.

Objective:
Explain why sampling instrument pre-checks are conducted.

Purpose of Sampling Instruments

Field analysis is a critical component of the sampling process. Field reading provides valuable data to the project scientists, which is used to evaluate laboratory data and make decisions regarding the sampling site conditions. The instrumentation used to provide field measurements is sensitive, and must be handled properly to ensure all readings correctly reflect the chemistry of the sampling location.

Purpose of Pre-Use Checks

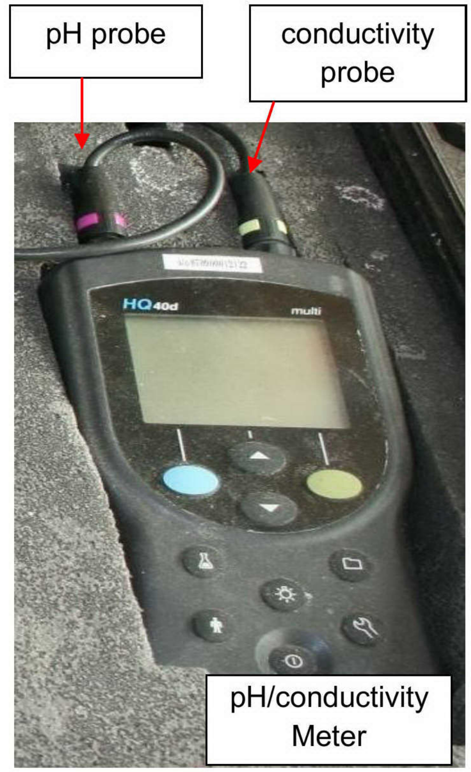
Pre-Use Checks are used to verify that the instruments are working within the expected parameters. The specific checks performed depend on the instrument and will be defined in the instrument operating procedure and/or vendor manual. Typically, the pre-use checks may involve filling probes with the appropriate filling solution, testing the instruments with known standards, and testing the batteries. Follow all applicable procedures for the proper set up of each instrument used.

Incomplete or incorrectly performed pre-use checks or instrument setup may invalidate all data obtained for the instrument on that day. If an instrument check is unsuccessful, the instrument may not be used.

Sampling Fundamentals

Types of Meters

a) pH meters



pH meters are used to measure the pH of samples. PH is a measure of the acidity or alkalinity of a sample. The pH scale is an expression of the effective concentration of hydrogen ions in solution and typically runs from about 1 to about 14. A pH of 7 is considered “neutral” or not acidic or basic. PH less than 7 is acidic and pH greater than 7 is alkaline (also referred to as “basic”). Typical pH meters consist of a measuring probe which is connected to an electronic meter. The pH probe measures the activity of hydrogen ions surrounding a thin-walled glass bulb at the tip of the probe. The probe produces a small voltage that is measured and displayed as pH units by the meter.

In order for the meter to provide the correct pH, the pre-use check must be properly performed. This typically involves setting up the meter by measuring the pH of one or more known solutions (buffers).

b) Conductivity

Conductivity is a measure of the ability of a solution to conduct electric current. Conductivity measurement is highly sensitive to temperature, therefore, conductivity instruments typically also measure and correct for temperature. Since most instruments provide an option for non temperature corrected readings it is important to make sure you have the instrument in the correct mode. It is important to allow the probe temperature to stabilize with regard to temperature before performing performance checks. Pre-use checks must be performed in the same range as the sample being measured.

Conductivity probes are very sensitive. Make sure they are not contacting anything solid when inserted into the flow-through cell. Ensure there are not bubbles on the probe tip. Both of these issues will result in poor data.

c) Oxygen Reduction Potential (ORP)

Oxygen Reduction Potential (ORP) or REDOX is the tendency of a solution to gain or lose electrons. A solution with higher (more positive) reduction potential will have a tendency to gain electrons and a solution with a lower (more negative) reduction potential will have a tendency to lose electrons. Just as the transfer of hydrogen ions determines the pH of a solution, the transfer of electrons determines the reduction potential. Reduction potential is measured in millivolts (mV). It can be a negative number.

Silver/silver chloride probes are typically used to measure reduction potential. It is critical that the proper filling solutions and pre-use checks are performed. This ensures the instrument functions properly.

Sampling Fundamentals

d) Turbidity

Turbidity

Turbidity is the cloudiness or haziness of a solution caused by particles suspended in the solution. These particles are generally invisible to the naked eye, similar to smoke in air. The measure of turbidity in water is an important indicator of water quality. Turbidity is measured in Nephelometric Turbidity Units (NTUs). This is a measure of the amount of light that is scattered by particles in a sample. A light beam is focused on a small vial of sample water. The instrument detects the scattered light and can give a measure of the amount of particulates or turbidity of the sample.

Turbidity meters must be calibrated quarterly and checked prior to use, at least once per day/shift/use. Turbidity vials should never be handled without gloves. Fingerprints, bubbles, or marks on the vials scatter the light, creating false positive results. All vials should be scrupulously clean and undamaged prior to use – with no water spots, fingerprints, scratches, marks or debris on the vial.

e) Dissolved Oxygen (DO)

Dissolved Oxygen (DO) is a measure of the amount of oxygen dissolved in the water. Along with other field measurements taken during sampling activities, DO helps the scientist understand how the water chemistry might be changing. There are two types of DO meters. One type includes a probe with a membrane which is filled with potassium chloride solution. The second type does not have a membrane or filling solution. The pre-use check appropriate to the probe/meter being used must always be performed according to procedure to ensure the meter is functioning properly.

Typical Instruments Used

a) Hach HQ30D and HQ40d Meters (conductivity, PH, Dissolved Oxygen (DO))


Hach HQ30D


Hach HQ40D

The Hach HQ40D measures various parameters such as pH, conductivity, salinity, total dissolved solids, or dissolved oxygen depending upon the probe attached to it. The meter has no capability without being attached to specific probes. The meter will recognize the type of probe attached to it and measure in that unit properly. The 40D has the ability to have two probes attached to it simultaneously. This allows the operator to acquire two readings at one time.

The Hach HQ30D will perform all of the same functions except it can only accept one probe at a time. This will require an operator to change out probes to acquire multiple readings.

Sampling Fundamentals

Hach 2100P

b) Hach 2100P/Q Turbidimeter

The turbidimeter measures turbidity from 0.01 to 1000 NTU in the automatic range mode with automatic decimal placement. It can also be used in a manual mode with three ranges.

Hach 2100Q

c) Orion Oxygen Reduction Potential (eH)

The Orion meter can be used to measure pH, ORP, and dissolved oxygen. However, we only use the ability to measure the ORP (as described above) using various probes attached to the meter.

Myron

d) Myron Model 6P

This instrument can be used to measure conductivity, pH, turbidity, or temperature. Its function buttons are used to scan the various readings the instrument is capable of performing.

Flow-Through cell

Flow-through cells allow a continuous flow of sample water to contact a number of measurement instruments at the same time. To obtain adequate results, ensure a continuous flow of water is reaching the cell at all times. Readings must be stable for pH, temperature, and conductivity prior to sampling. This indicates that the water in the well has been adequately purged and fresh groundwater is being sampled. This provides a sample which is most representative of the groundwater at the well site. The flow cell is normally used only when sampling groundwater for monitoring.

Flow-Through Cell

Sampling Fundamentals

Recording data

The data obtained from field instruments during sampling is vital to the scientists evaluating the water quality and possible changing conditions of the groundwater. Performing pre-use checks and carefully setting up the needed instrumentation is the first step in generating high quality data. But equally important is clearly and correctly recording the data obtained during sampling measurement.

Always ensure the units of measure are correctly displayed on the meters and paperwork.

Always take the time to write clearly and ensure decimal points are recorded and are placed correctly.

The data recorded during field measurements is a quality record. The numbers can not be changed after the fact, even when a mistake appears obvious (such as forgetting a decimal point or recording it in the wrong place). It is very important that the NCO reviews the data carefully AT THE TIME IT IS BEING RECORDED. This is when you have the opportunity to correct (and avoid!) any errors.

Control of Monitoring Equipment

Instruments used to generate water quality data must be controlled. Instruments are checked out for use and tracked by a unique identifier (usually the serial number). The instrument owner must ensure the instrument is calibrated as required. Documentation of calibration, periodic maintenance, verification data, verification standards and documentation, and inventories must be maintained for all instruments.

Sampling Fundamentals

OBJECTIVE #9 –GROUNDWATER LEVELS

Objective:

- Explain what the terms "upgradient" and "downgradient" mean with respect to groundwater flow.
- Explain what each of the following terms means:
  - Reference Point
  - Measuring Point
  - Adjusted Depth to Water
- Given a picture of an e-tape measurement and a designated point on the tape, identify the correct reading which should be documented on the groundwater level measurement form.

Background Information

Groundwater enters the unconfined aquifer from recharge areas to the west and eventually discharges to the Columbia River. Additional water infiltrates through the vadose zone beneath the Hanford Site. Hydrologists estimate that the total discharge of groundwater from the Hanford Site aquifer to the Columbia River is in the range 1.1 to 2.5 cubic meters/second (290-660 gallons/sec). This rate of discharge is very small compared to the average flow of the river, ~3,400 cubic meters/second (898,184.974 gallons/sec).

In the part of the site north of Gable Mountain and Gable Butte, unconfined groundwater flows generally toward the river. The water table beneath the 200 East Area is relatively fl at because of the presence of highly permeable sediment of the Hanford formation at the water table. Groundwater enters the vicinity of the 200 East Area from the west and divides, with some migrating to the north through a gap between Gable Butte and Gable Mountain (Gable Gap) and some moving southeast toward the central part of the site. In the south part of the Hanford Site, groundwater enters on the 300 Area from the northwest, west, and southwest.

Measurements of depth-to-water (DTW) in wells represent some of the most basic monitoring information collected about the aquifers beneath Hanford. This information supports many of the goals of the groundwater project.

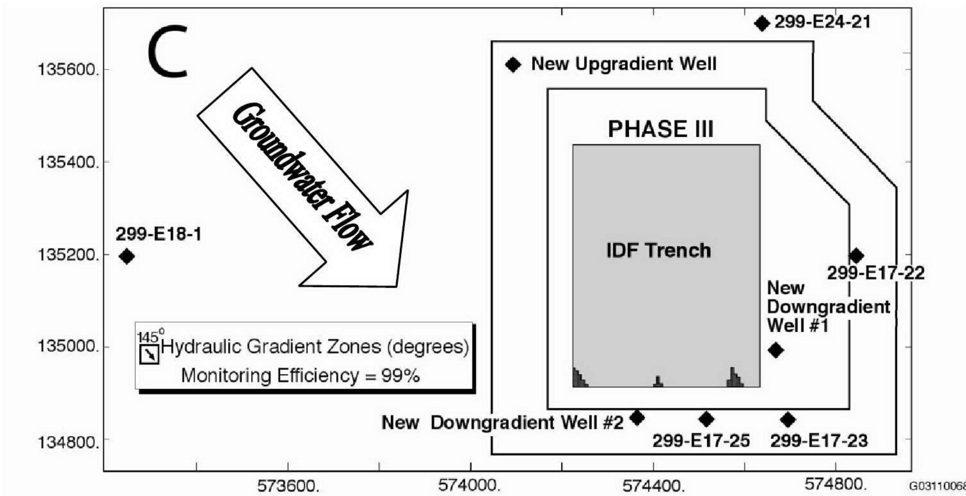
Depth-to-water measurements are used to calculate water-level elevations in wells. The change in the water-level elevation from well to well indicates the direction of groundwater flow in an aquifer: water flows from areas where water-level elevations are high toward areas where they are lower. The change in the water level elevation over a distance is called a hydraulic gradient. Thus, the groundwater is forced to flow by this gradient from the upgradient to the downgradient.

Our interest is in which direction the groundwater flows under an area of potential contamination release. Contaminant plumes in the aquifer move with the groundwater flow, so the direction of groundwater flow indicates the future path in which a groundwater plume will travel.

We identify many sample wells for a sampling project as either upgradient wells or downgradient wells. Water in the area of the upgradient wells flows into the area we are

Sampling Fundamentals

concerned about possible contaminant leakage. Water in the area of the downgradient wells has passed through the potentially contaminated area of interest. The groundwater flow



direction is also needed to determine if a network of groundwater wells will be able to detect whether or not contaminants from a waste site have entered the groundwater. When contaminants from a waste site enter the groundwater, the contamination will be present beneath the site and will move downgradient (in the direction of the water flow) from the site. Sample results from wells that are upgradient (upstream in the water table flow) are compared to the sample results from downgradient wells to determine if contaminants have reached groundwater. The groundwater flow direction is needed to distinguish between the upgradient and downgradient wells and for deciding where to drill new wells.

DTW measurements are also necessary to assess the usability of wells for groundwater sampling because a sufficient amount of water must be present in order for a sampling pump to operate. Water levels are declining over much of the site, so trends over time in the water-level measurements are used to forecast when a well may become dry or contain too little water to sample.

Accurate depth-to-water measurements are needed from wells across the entire Hanford Site, but accuracy is particularly important in some specific areas. In the 200 East Area, well water-level elevations vary by only about 4 centimeters (2.54 cm = 1 inch) from the burial grounds in the northwest to the PUREX cribs in the southeast (this is several miles apart). At any particular waste site in the 200 East Area, the elevation difference is even smaller. When the difference in water level between two points in an area is small we say that the water table is very flat. To determine groundwater flow directions in this area, highly accurate depth-to-water measurements are needed – differences of only a few millimeters in the depth to water are important. The flat water table actually extends far beyond the 200 East Area. It encompasses the entire region from west of the 100-B,C Area, along the north side of Gable Butte, through the gap between Gable Butte and Gable Mountain, through the 200 East Area, and extends to the southeast to just beyond the Central Landfill. Water-level elevations throughout this entire area vary by only about 30 centimeters (about 1 foot). A flat water table also occurs in the 300 Area and in the region south of the 100-F Area to the Old Hanford Town site.

Sampling Fundamentals

Measuring Water Levels

In order to measure the water level within a well a person must know how to locate the well and how to use the instruments to measure the level.

Locating a Well - Several methods are used to locate wells. These methods include: Q Map (web-based program), Hanford Plant Coordinate Maps (Old and New). Maps are located in 6269 WSCF "5-Bay". See Attachment 7 for explanation of how wells are identified and named.

Water Level Measurement

The following equipment is used to measure water levels in wells. These include a transducer and Rugged Reader for artesian wells or an e-tape for groundwater wells.

E-Tape

Rugged Reader

LT 700

The e-tape must be standardized every six months. This means the e-tape is compared to a standard and verified to not have stretched beyond a certain distance. A sticker is placed on the e-tape when it has been standardized and when it is due for standardization.

When conducting groundwater level measurements several terms must be understood. These include:

Reference Point (RP) - A point designated on a well that has been precisely surveyed for elevation and is used to compute the actual elevation of water in the well. Many reference points are stamped with an "X" on the well casing

Sampling Fundamentals

When the RP cannot be readily identified because a stamped “X” is not present or for some wells, more than one stamped “X” may be present, assume the RP is the top of the outer casing on the north side.

Measurement Point (MP) - A point on a well from which the distance to the water in the well is actually measured. Discuss Top of Manhole (TOM), Top of Case (TOC), Top of Tee (TOT), Top of Pump Plate (TOPP), etc.

MP-RP - The elevation of the measurement point minus the elevation of the reference point (i.e., the vertical offset of the measurement and reference points). When the MP and RP coincide, the MP-RP is zero. When the MP is above the RP, the MP-RP is greater than zero. When the MP is below the RP, the MP-RP is less than zero.

Adjusted Depth to Water - The distance from the RP to the surface of the water in the well. This is computed by subtracting the MP-RP from the measured depth to water:

(Depth to Water from MP) - (MP-RP) = Adjusted Depth to Water

E-Tape

The two wires are attached to a probe which measures a current flow (provided by a 9 volt battery) when the probe comes into contact with water. When the probe contacts water an audible sound is emitted. The e-tape is also fitted with a test button to verify the battery and alarm are functional. When the test button is pushed it will emit a noise. This ONLY verifies the audible signal works – it DOES NOT verify the probe is working.

The sensitivity of the probe can be adjusted using the sensitivity knob. It also acts as the ON-OFF switch.

Precautions –

The standardization of the e-tape must be current. If not - it cannot be used. This is obtained by looking at the standardization sticker on the e-tape. If no sticker is attached then the instrument cannot be used.

Prior to using the e-tape it must be verified as operational. This means the audible alarm is functioning by turning it on and pressing the test button. Another aspect of verifying operability is to verify the probe is working. The preferred method to test the probe and associated circuitry is to turn the e-tape on and dip the probe is a cup of tap water (do not use pure water). If the e-tape is operable the alarm will sound.

If the battery is dead it must be properly disposed of in accordance with applicable waste management practices. This means placing it in the appropriate battery accumulation area for future disposal (this does not include throwing it away in regular trash) or recycling.

Rugged Reader and LT500

S&GRP is using the Rugged Reader and the LT500 for taking the artesian well levels.

Sampling Fundamentals

1) Disconnect Level Troll from manifold connector and store LT in appropriate manner.
2) Disconnect and store LT connector as appropriate.
3) Secure well cap and check to see that site is in order.
4) Finish last step of procedure GRP-FS-04-G-014.

Example of Readout of parameters

Live Display of Level Troll Parameters.

Bottom of Rugged Reader with 12 pin connector.

12-Pin cable connected to Rugged Reader.

Some wells are naturally pressurized. These are commonly referred to as artesian wells. Artesian wells are created by the fact that the water table is actually higher at some point than the top of the pressurized well. Pressurized wells will have water flow even without the use of a pump and as such an e-tape cannot be used.

When pressurized wells are measured for depth to water, the results of that measurement will be recorded as a negative MP-RP (-DTW) above the measuring point (MP). When you look at the formula for adjusted depth to water (ADTW) it demonstrates that the hydraulic head for the well is above the well's measuring point.

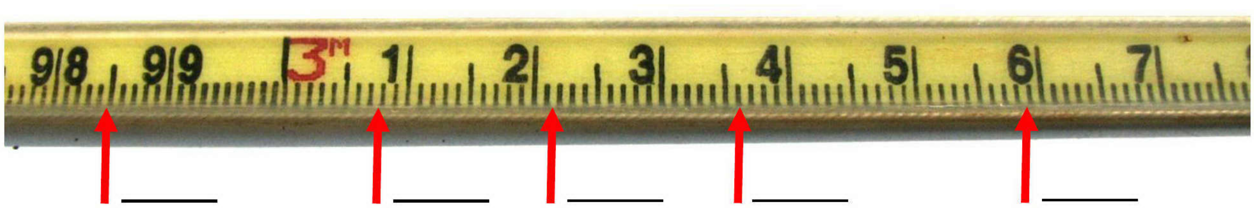
Adjusted Depth to Water (from reference point) = (Depth to Water from MP) - (MP-RP)

> When MP-RP is a negative value then when using the formula we see that the ADTW = - (- MP-RP) = + value. This tells you that there is a height of water column above the point where the measurement was taken.

When transporting any measurement equipment care must be taken to secure it to prevent damage.

The e-tape is a metric tape and is marked (numbered) in both meters and centimeters. There are marks between each cm reading to allow reading to the nearest millimeter (mm).

Identify what reading is recorded for each mark indicated by the arrows in the picture below and what reading would be documented onto the Water Level Form (**See Attachment 8**).



Sampling Fundamentals

OBJECTIVE #10 – FIELD LOGGING AND ELECTRONIC DATA GATHERING (FLEDG)

System Overview
This data system will be used to streamline data entry into the water level reports. It will also use a default system which cues the operator to perform within the given parameters of the system.

There is a tutorial video and a user guide for any information to how the system works. The tutorial is very comprehensible and the way the inputting is set up is very user friendly so we will not be working with a procedure to do the data input.

The FLEDG project will provide an electronic tool for automating water-level measurements and groundwater field sampling activities. The automation will help in associated data entry, improve the accuracy of the information recorded, and enhance the efficiency and sampling capacity of field personnel.

Software
The FLEDG Field component operates on a site standard tablet notebook/laptop using Windows™ XP and SQL™ Express 2005.

FLEDG operates on the Hanford Local Area Network (HLAN) connecting to the main FLEDG database using an SQL Server driver (standard on all HLAN computers). Any connections to other databases utilize SQL Server drivers or an Oracle 8.1.7 driver. The Oracle driver must be installed and is available through Software Distribution.

Security
User access to the FLEDG system will be controlled by the local account signed on to the workstation and at the database level.

FLEDG data is not considered sensitive within the context of use on the HLAN. There are no special requirements for Official Use Only labeling on the FLEDG system or any of its reports.

Equipment Operation
There are no special equipment operation issues associated with FLEDG.

Before beginning the FLEDG system, the user must have a notebook/laptop and be able to access the HLAN. For Groundwater measurements the Toughbook laptop will be used (**See Attachment 9**).

OBJECTIVE #11 – USE OF MOTOR VEHICLES

Off-road vehicle travel and activities criteria must be met depending on the fire danger level. All diesel units equipped with catalytic converters must now be treated with the same limitations as gasoline powered units. The definition of "Off-Road" is an unpaved surface where the vehicle is or could be in contact with natural vegetation. Each year the Hanford Fire Department provides specific written guidance for off-road driving.

Refer to current Fire Marshal Advisory Bulletin

http://www.rl.gov/homepage/pdf/AB07-001_Rev6_Off_Road.pdf

In all cases of off-road travel, a hand shovel, fire extinguisher (minimum 2A rated), and communications (cell phone) must always be provided in the vehicle. Additional considerations for off-road travel during high, very high, and extreme fire danger levels may include a Battalion Chief review of the planned path, having a water truck wet down the area immediately before travel, or having a water truck immediately available should a problem occur. These requirements are strictly for off-road travel and do not include consideration for any work that is being planned in the field. Based on the planned work, additional requirements (permits, etc.) may also be required.

Each General Services Administration vehicle contains a Proof of Insurance folder that is to be used in the case of a crash. This folder has an accident report and two Statement of Witnesses forms. The U.S. government is self-insured for loss of damage to government property and the liability of government employees for actions within the scope of their duties. Claims for injury or death of third parties, or damage to third party property, arising from federal employee negligence in the operation of government-furnished vehicles are covered by the Federal Tort Claims Act (U.S.C. 271 et seq.) as implemented by 28 CFR, Part 14.

Federal Regulation 101-39.300 prohibits the use of tobacco products in Government vehicles.

Vehicle operators will also:

- Conduct a 360-degree inspection of the vehicle and surrounding area before driving the vehicle for the purpose of identifying any obstructions, vehicle damage, or visible vehicle deficiencies.
- Park vehicles only in designated parking areas, except during emergencies, or operational necessity.
- Ensure vehicles to be operated off-road are equipped with a two-way communication device (Cell phone, etc.), fire extinguisher, and a shovel.

- Not drive or park over vegetation to minimize the potential for inadvertent ignition of the vegetation.

- Operate vehicles off-road only to perform authorized work per guidelines established by the fire marshal.
- Work will be conducted within the limitations established by the fire permit.

- Periodically check exhaust systems for accumulation of vegetation and remove any noted accumulation when the vehicle has cooled.

OBJECTIVE #12 –SAMPLE STORAGE UNIT (SSU)

Objective:

- Describe the general requirements for Storing Samples.
- Explain the purpose of a Sample Storage Unit (SSU).
- Describe when a SSU acquires/relinquishes custody of samples.
- State the general storage requirements for samples in a SSU.

SSU Introduction

The S&GRP Field and Well Sampling organization provides quality samples in support of RCRA, CERCLA, TPA agreements, and DOE orders. This sampling provides DOE and other site contractors the information necessary to meet regulatory requirements, protect the Columbia River, and to determine long term stewardship strategies.

A representative sample must be collected and handled in such a fashion as to preserve its original form and chemical composition, as well as to prevent contamination or changes in concentration of the materials to be analyzed. It is imperative to ensure sample integrity and maintain quality assurance standards for a sample to be "typical" of the larger body of the material.

If a generator cannot readily identify the materials being produced, samples of those streams may need to be collected and sent to a laboratory for analysis and identification in order to comply with regulatory requirements. However, quite often we cannot take the samples for analysis immediately. As such, we periodically must store samples for a short period of time. During this time the samples must be controlled and properly maintained to ensure the integrity of the sample is maintained. Storage areas shall be:

- Dedicated to samples only.

Sampling Fundamentals

OBJECTIVE #12 –SAMPLE STORAGE UNIT (SSU)

- Controlled to prevent damage or loss, and to maintain sample container and identification integrity.
- Measures shall be taken to avoid sample contamination during storage.
- Measures also shall be taken to contain and avoid material spills during storage

General Requirements for Sample Storage (HASQARD, DOE/RL-96-68, Vol 2, Section 4.2.3) When storage is necessary, the samples shall be:

- Stored in predetermined physical and environmental conditions (cooling and maintaining an appropriate temperature) commensurate with the intended analysis and regulatory requirements specific for the analyte and matrix.
- Daily verification and documentation of storage temperature shall be maintained in accordance with project Data Quality Objectives (DQO).
- Various methods are allowable to verify temperatures have been properly maintained. These include the use of thermometers, digital readouts, or Storage Temperature blanks (20 ml sample bottle with water) used to validate proper storage temperatures have been maintained.

Sample Storage Areas – An area which is secured and controlled for the purpose of maintaining custody of samples in accordance with the general requirements above.

Sample Storage Units (SSU)

An enclosure used to store samples under the correct physical and environmental conditions. Depending on the unit and its location, the SSU may not have a lock, but will be secured in a locked area (i.e. Sample Storage Area).

Sample Storage Units (SSU) may be units that maintain an appropriate environmental condition, e.g., proper temperature, such as a portable electrically powered cooler (SSUP), a freezer (SSUF), or a refrigerator (SSUR).

Sample Storage Units (SSU) may also be any container that is used to control custody of the samples in accordance with the general requirements. In general, these types of units do not control environmental factors but are used to control and contain the samples to prevent contamination or tampering.

Examples of documentation used to meet the general requirements

- Logbooks – Acquire a copy of SSU logbooks

- Chain of custody – The sample's original chain of custody must stay with the sample at all times. This includes the period while it is in storage. The COC will be kept in a plastic bag in any SSU or in a controlled manner (e.g., locked area or cabinet) near the sample. When samples are placed in an SSU the COC is relinquished to the SSU. The next person to transport the sample will receive the COC/Sample from the SSU

Sampling Fundamentals

OBJECTIVE #13 – ONSITE PACKAGING AND SHIPPING REQUIREMENTS

OBJECTIVE #13 – ONSITE PACKAGING AND SHIPPING REQUIREMENTS

Objective:

- Identify the regulatory agencies which define the shipping requirements for:
  - On-site Shipping Activities
  - Off-site Shipping Activities
  - List the on-site laboratories used by S&GRP.

General Requirements

a) HASQARD Requirements (Vol II, 4.2.5)

Regulations for packaging, marking, labeling, and shipping hazardous materials, hazardous substances, and hazardous wastes are enforced by the DOT (49 CFR 171-177).

Packaging and transportation of Hanford Site materials along roads accessible to the public or in the public domain shall be in compliance with DOT regulations and DOE requirements.

Onsite Laboratories

The following laboratories are those located on the Hanford site used by S&GRP to analyze samples.

WSCF

Waste Sampling and Characterization Facility (WSCF) located between 200 East and 200 West Areas, is a full service laboratory providing process control, regulatory and industrial hygiene analyses on air, water, soil, vapor, sludge and miscellaneous samples in support of major Hanford projects and programs. Capabilities include organic, inorganic, radiochemical, and industrial hygiene analyses.

222-S

The 222-S Laboratory provides critical support for Hanford tank waste cleanup and for other Hanford Site cleanup activities, including soil and groundwater. The 222-S Laboratory, located in the 200 West Area of the Hanford Site, provides technical services to receive, analyze, and report the results from approximately 25,000 inorganic, organic, and radionuclide analyses. Analyses are typically performed on highly radioactive and/or hazardous samples received from multiple sources on the Hanford site.

ESL Building

The Environmental Science Laboratory at PNNL provides support to the soil and groundwater program at Hanford.

3420 Building

This is where matrix spikes are normally made. These spikes are used to QC check the various laboratories used by S&GRP.

NOTE: There are additional laboratories outside of the Hanford complex which conduct analyses for various S&GRP projects.

OBJECTIVE #14 – PROTOCOL REQUIREMENTS OF CLEANED EQUIPMENT AND CONTROL

Objective:

- Discuss the ramifications of not having clean sampling equipment when conducting sampling activities.
- Identify the requirement for sampling equipment cleanliness.

Purpose of using clean sampling equipment

An important aspect of quality control is the decontamination, e.g., cleaning/rinsing for groundwater sampling, of field sampling equipment. Improperly cleaned and prepared sampling equipment can lead to misinterpretation of environmental data due to interference caused by cross-contamination. Care should be taken that any other tools that come into contact with a sample are clean as well. For example, if a screwdriver is used to separate a container it must be clean too.

In addition, sampling equipment left in-situ for purposes of obtaining multiple samples over a period of time (e.g., periodic sampling for permit compliance) will often need to be cleared of accumulated contaminants, silt, soot, dust etc. This will assure that the samples are free of such material as may accumulate on the sampling equipment itself between uses.

> Sample equipment is cleaned with de-ionized water and wrapped in foil. It is usually of no consequence if the foil has been slightly torn by the time it is to be used as most of the equipment will be flushed with the sample matrix before an actual sample is taken. Therefore, risk of contamination is minimal. [5]If the equipment is apparently soiled (if the foil is torn or not), replace the equipment which has the foil intact and/or has been cleaned.
>
> Disposable 5mL plastic core samplers are taken to the field in plastic bags inside cardboard boxes. Once the boxes are opened, the core samplers are taken to the field inside plastic bags and left in the boxes. Therefore, the risk of contamination is minimal and the disposable samplers can be used as is.

General Requirements

a) Control/storage of cleaned sampling equipment

- Control of cleaned equipment is done by placing it in a locked storage area; i.e., WSCF/6268.
- All cleaned equipment is wrapped in foil with the shiny side out.

ATTACHMENT 1, GROUNDWATER SAMPLE REPORT

GROUNDWATER SAMPLE REPORT — No Dump

Project:						Date:	Page ___ of ___
Task Order/Month:	QC Type:					Calculations:	
Well Number:	Well ID :						
Total Purge Volume (gal):	Purge Flow Rate (gal/min):						
Pump Type:	Time on:	Water:	Purge:	Samp.:	Off:		

	Yes	No
IH Required:	☐	☐
RCT Required:	☐	☐

Total No. Bottles: 0 Collector:

FIELD												
MP:			RP:			MP-RP (m)			E-Tape No.:			
Time:			DTW: (m)									
Time												

FIELD OBSERVATIONS

Weather and Field Comments

Pre Check:	pH:	Cond:	Post Check: pH:	Cond:
	STD:	STD:	STD:	STD:

Comments:

Well condition acceptable: ☐ Yes ☐ No. If no, see field comments.

Well capped and locked ☐ Yes ☐ No Logbook/Pg# : HNF-N-506 ____ / ____

☐ WAL Requirements Verified

Data Recorded by: ______________________ ______
Print and sign name Date

Independent Review: ______________________ ______
Print and sign name Date

Report Printed O 8/7/2012 A-6003-667 (REV 5)

ATTACHMENT 2, LIQUID SAMPLE REPORT

FIELD CHARACTERIZATION WATER/OTHER LIQUID SAMPLING REPORT

PROJECT(S)			PAGE 1 OF 1
			DATE
SAF NO.(S)			
LOCATION	LOGBOOK NO./PAGE		
WELL NAME	WELL ID	ACTUAL DEPTH ☐ft ☐m	
BOTTOM OF CASING (bgs) ☐ft ☐m	BOTTOM OF BOREHOLE (bgs) ☐ft ☐m		

SAMPLES COLLECTED

TOTAL NUMBER OF BOTTLES	TOTAL NUMBER OF CHAINS	COLLECTOR
WSCF	F02-007-160	

SAMPLE NO.	BOTTLE QTY/SIZE/TYPE	LOT NO.	PRESERVATION	ANALYSIS
B1W737	1 / 20mL / G/P		None	Activity Scan;

FIELD INFORMATION

PURGE RATE	☐ gpm ☐ Lpm	TIME ON	TIME WATER	TIME PURGE	TIME SAMP	TIME OFF
PURGE VOLUME REQUIRED	☐ gal ☐ L					

WHERE ARE SAMPLES LOCATED AT THIS TIME? ☐ WSCF ☐ 222-S ☐ MO-612 ☐ MO-745 ☐ 6269 ☐ OTHER

FIELD MEASUREMENTS

SAMPLE NO.							
TIME							
pH (unitless)							
TEMP ☐°F ☐°C							
COND (μs/cm)							
TURB. (NTU)							
D.O. (mg/L)							
ORP (mV)							

FIELD OBSERVATIONS

WEATHER

FIELD COMMENTS

SUPPORT PERSONNEL

SAMPLES SURVEYED BY RCT ☐ YES ☐ NO

RECORDED BY ______ PRINT NAME ______ SIGN NAME ______ DATE

CHECKED BY ______ PRINT NAME ______ SIGN NAME ______ DATE

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ATTACHMENT 3, SOLID SAMPLING REPORT

FIELD CHARACTERIZATION SOIL/OTHER SOLIDS SAMPLING REPORT

PROJECT(S)		PAGE 1 OF 1	
		DATE	
SAF NO.(S)			
LOCATION	LOGBOOK NO./PAGE		
WELL NAME	WELL ID	ACTUAL DEPTH ☐ft ☐m	
BOTTOM OF CASING (bgs) ☐ft ☐m	BOTTOM OF BOREHOLE (bgs) ☐ft ☐m		

SAMPLES COLLECTED

TOTAL NUMBER OF BOTTLES **TOTAL NUMBER OF CHAINS** **COLLECTOR**

WSCF **F02-007-160**

SAMPLE NO.	BOTTLE QTY/SIZE/TYPE	LOT NO.	PRESERVATION	ANALYSIS
B1W737	1 / 20mL / G/P		None	Activity Scan;

FIELD INFORMATION

WHERE ARE SAMPLES LOCATED AT THIS TIME? ☐ WSCF ☐ 222-S ☐ MO-612 ☐ MO-745 ☐ 6269 ☐ OTHER

CONTAINER/DRUM/TOTE/BOX

SAMPLE MATRIX DESCRIPTION ☐ SOIL ☐ SLUDGE ☐ RESIN ☐ GAC ☐ FILTER PAPER ☐ OTHER

FURTHER SAMPLE MATRIX EXPLANATION/DESCRIPTION [NOTE ANY ODOR, COLOR, TEXTURE (E.G., SLIMY, OILY, GRANULAR, ETC.)]

FIELD OBSERVATIONS

WEATHER

FIELD COMMENTS

SUPPORT PERSONNEL

SAMPLES SURVEYED BY RCT ☐ YES ☐ NO

IS A BLUE CARD REQUIRED ☐ YES ☐ NO BLUE CARD NO

IS SRS PROVIDED AND COMPLETE ☐ YES ☐ NO

RECORDED BY
PRINT NAME SIGN NAME DATE

CHECKED BY
PRINT NAME SIGN NAME DATE

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ATTACHMENT 4, VAPOR SAMPLING REPORT

FIELD CHARACTERIZATION VAPOR SAMPLING REPORT

PROJECT(S)		PAGE 1 OF 1
		DATE
SAF NO.(S)		
LOCATION	LOGBOOK NO./PAGE	
WELL NAME	WELL ID	ACTUAL DEPTH ☐ft ☐m

SAMPLES COLLECTED

TOTAL NUMBER OF BOTTLES	TOTAL NUMBER OF CHAINS	COLLECTOR

WSCF **F02-007-160**

SAMPLE NO.	BOTTLE QTY/SIZE/TYPE	LOT NO.	PRESERVATION	ANALYSIS
B1W737	1 / 20mL / G/P		None	Activity Scan;

FIELD INFORMATION

PUMP/MODEL NO.	BOTTOM OF PACKER (bgs) ☐ft ☐m
SERIAL NUMBER	BOTTOM OF CASING (bgs) ☐ft ☐m
PURGE RATE ☐gpm ☐Lpm	BOTTOM OF BOREHOLE (bgs) ☐ft ☐m
PURGE VOLUME REQUIRED ☐gal ☐L	CASING INSIDE DIAMETER ☐in ☐cm
TIME PURGE ON	BOREHOLE DIAMETER ☐in ☐cm
TIME PURGE OFF	CONTAINER/DRUM/TOTE/BOX

FIELD OBSERVATIONS

WEATHER	TEMPERATURE ☐°F ☐°C	BAROMETRIC PRESSURE(mmHg) _____ ☐ RISING ☐ FALLING
	WIND DIRECTION	WIND SPEED (mph)

SKY CONDITIONS (E.G., SUNNY, PARTLY CLOUDY, CLOUDY, FOGGY, OVERCAST, ETC.)

FIELD COMMENTS

SUPPORT PERSONNEL

SAMPLES SURVEYED BY RCT ☐ YES ☐ NO

RECORDED BY ______ PRINT NAME ______ SIGN NAME ______ DATE

CHECKED BY ______ PRINT NAME ______ SIGN NAME ______ DATE

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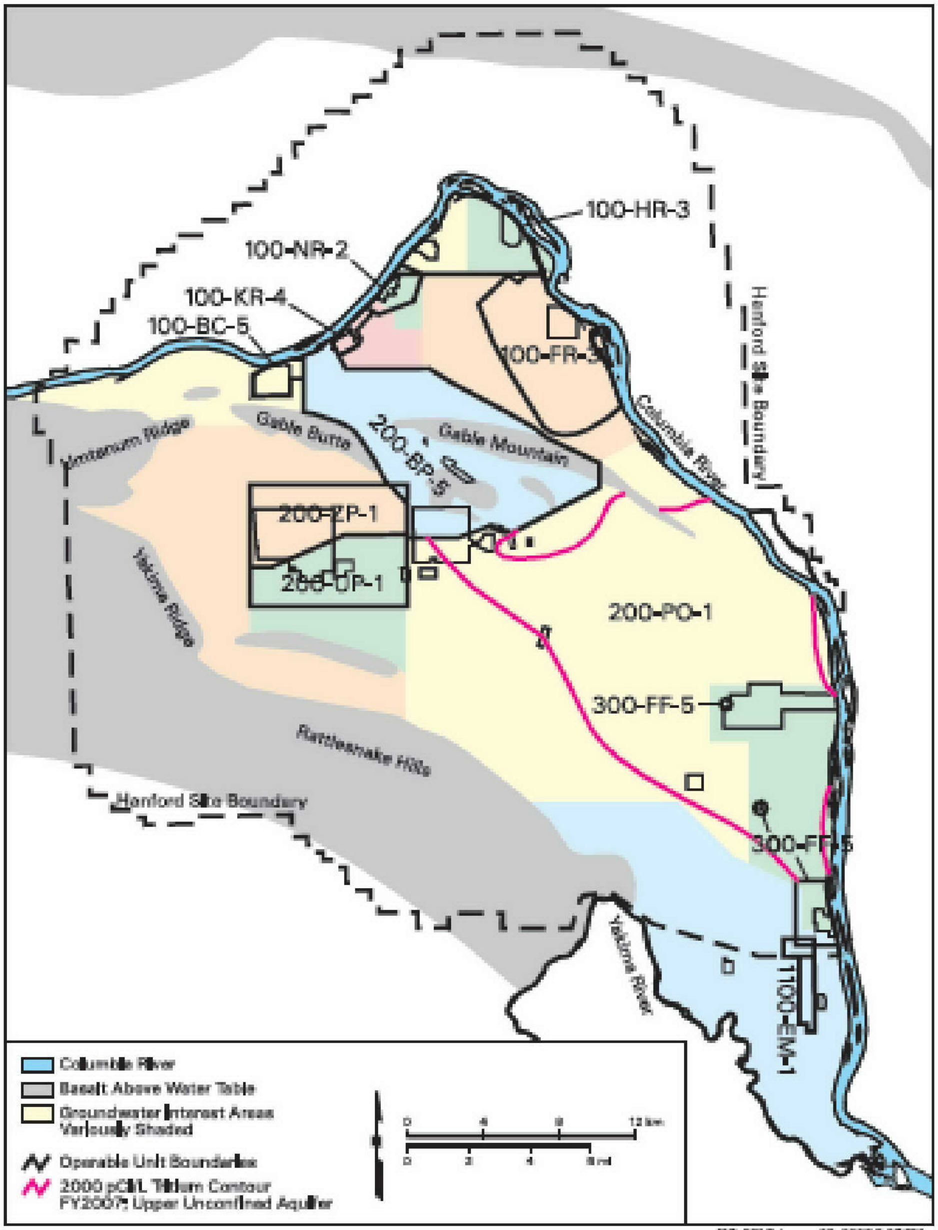
ATTACHMENT 5, OPERABLE UNIT MAP



ATTACHMENT 6, POST PRESERVATION TABLE

*Amount of Required Preservative⇨				**4mL**	**1mL**	**.5mL**	**.25mL**
Container Volume (size)⇨				4000mL	1000mL	500mL	250mL
Ratio	Ampule	Total Volume of Ampule	Amount of Preservative	*Quantity of Ampules needed*			
Concentrate		1mL					
1:1	:	1mL					
1:3	:	1mL					
1:1	:	2mL					

*Amount required for preservative is in the procedure. This amount will vary with the preservative used. This is only an example amount and not necessarily accurate when preserving sample bottles for a sampling event.

ATTACHMENT 7 – WELL ID/NAMING PROCESS

1.0 PURPOSE/SCOPE

1.1 Purpose

This document implements the requirements for assigning well identification numbers, well names and associated tracking.

1.2 Scope

This document provides the methods and requirements for assigning unique well identification numbers (WINs) and Hanford Site well names, and for tracking the same. The WIN and the Hanford Site well name are key elements in well inventories, recording and tracking geologic/hydrologic data and well status, and linking available data to the Hanford Well Information System (HWIS) database and its supporting databases. A **WIN** shall be assigned to each groundwater resource protection well, to each temporary and permanent GeoProbe and geotechnical soil boring, and each river substrate and aquifer porewater monitoring tube. (The WIN is analogous to the well ID number in the HWIS database.) A **well name** shall be assigned to each groundwater resource protection well, permanent GeoProbe and geotechnical soil boring, and each river substrate and aquifer porewater monitoring tube on the Hanford Site.

This document broadens the concept of a “well” to include several special kinds of geotechnical facilities that are frequently constructed on the Hanford Site (e.g., GeoProbe [and other push technologies], river substrate and aquifer porewater monitoring tubes, soil gas monitoring tubes, and moisture probes). The word “well” is used hereinafter in this general sense. A well name shall be assigned to each permanent groundwater resource protection well, Geoprobe, geotechnical soil boring, and each river substrate and aquifer porewater monitoring tube on the Hanford Site. Items not considered permanent shall utilize the WIN as the well Name.

Note: The naming and/or numbering of test pits, trenches, remedial excavations, and all other sampling and monitoring points is not covered by this document.

2.0 REQUIREMENTS/DEFINITIONS

2.1 Definitions

2.1.1 **Fluor Hanford Well Administrator (FHWA)** - Person responsible for operation and maintenance of the Hanford Well Maintenance database, the HWIS, issuing WINs, and assigning all Hanford Site well names. The FHWA is the authoritative source for all WINs and Hanford Site well names.

2.1.2 **Aquifer Porewater Monitoring Tube** - A variation of the push technology in which a small-diameter hollow rod with a sacrificial tip is typically pushed/driven into the ground (generally much less than approximately 30 feet). An approximate 3/8-inch outer diameter polyethylene tube with an approximate 1-inch long screen section on the end is placed at the selected depth, and the rod is withdrawn. Generally put in place in cluster arrangements to monitor three or four horizons of interest.

2.1.3 **Hanford Site Well Name** - A Hanford Site well name is a unique assemblage of alphanumeric characters, arranged into three groups of less than four characters each, that provides the means to name the wells on the Hanford Site.

2.1.4 **Hanford Well Information System (HWIS)** - An electronic database that contains current and historical information from the initial drilling through the decommissioning of a well. Some of the information includes surveyed locations, status of the condition of the well (e.g., in-use or decommissioned), and maintenance activities (e.g., routine and non-routine).

2.1.5 **Multiple Well Site** - A site where one or more wells are drilled immediately proximate to the original well and is completed in slightly shallower or deeper geologic intervals. This is also knows as a cluster well site.

2.1.6 **Piezometer Well** - A host well that contains one or more small-diameter tubes (e.g., approximately 1.5-inch inner diameter) that extend to different depths, generally used to monitor different hydrologic units.

2.1.7 **River Substrate Monitoring Tube** - A variation of the aquifer monitoring tube modified for installation by SCUBA divers in the river substrate. It typically consists of an approximately 0.5-inch-diameter polyvinyl chloride (PVC) pipe, about 24-inches long that is driven approximately 12 to 18 inches into the river substrate. The PVC pipe has a number of approximately 1/8-inch holes drilled through the sides of the tube near the driven tip. An approximate 3/8-inch outer diameter polyethylene tube with an approximately 1-inch long screen on the tip end and two "O" rings on the upper end is then inserted into the PVC pipe to isolate the sampling screen from the river water.

2.1.8 **Well Identification Number (WIN)** - Each piece of government property on the Hanford Site is assigned a unique number. The WIN is the unique number assigned to each resource protection well, temporary or permanent GeoProbe or geotechnical soil boring, or river substrate or aquifer porewater monitoring tube.

2.1.9 **Dept of Ecology Well Tag and Unique Identification Number** - WAC 173-160-311 states that it shall be the operator's (driller's) responsibility to place a well identification tag on every well they construct, alter or reconstruct. This unique identification tag is issued by the Dept of Ecology. It is to be placed on the outer well casing or other prominent well feature. The unique identification number shall be used on subsequent documentation to the Dept of Ecology. This numbering system is independent of the well naming and numbering system described in this document.

2.2 Requirements

2.2.1 Well Identification Numbers

a. The use of temporary well names and/or numbers is not allowed. All documentation will use, as a minimum, the WIN.
b. The WIN is a unique property number consisting of an alphabetic character followed by four numerals (e.g., A8704, B3854, or C3356).
c. The POC (or designee) requests the WIN from the FHWA for each groundwater resource protection well, GeoProbe and geotechnical soil boring, and river substrate or aquifer porewater monitoring tube.
d. The WIN is provided to the drilling/decommissioning subcontractor for inclusion on the Notice of Intent (i.e., "Start Card") application to the Washington State Department of Ecology (Ecology).
e. The FHWA is the custodian of the WINs and shall maintain the HWIS database of all the WINs assigned.
f. In accordance with Washington Administrative Code (WAC) 173-160, all wells, records of construction, maintenance operations, sampling, surveying, and other documentation generated shall include the WIN.
g. After a WIN is issued, it will not be reassigned or changed.
h. The WIN shall be affixed to the well casing of all resource protection wells in accordance with WAC 173-160-311.
i. If the WIN cannot be affixed to the well casing, an alternate location may be used. The alternate location must be immediately adjacent to the well, visible, and sufficiently anchored to be considered permanent.
j. For Piezometers within a resource protection well, each piezometer tube and the host well will be assigned a unique WIN.

k. For river substrate and aquifer porewater monitoring tubes, the WIN shall be on a self-adhesive label affixed to the upper-most end of the polyethylene tubing.
l. It is unlawful to remove or tamper with a WIN except during well maintenance/alteration activities by a State of Washington licensed driller.
m. When a well is decommissioned, the WIN shall be relocated in accordance with the decommissioning plan.

2.2.2 Well Names

a. The use of temporary well names and/or numbers is not allowed. All documentation will use, as a minimum, the WIN. When available, the well name will also be used on all documentation.
b. Well names will be assigned to all groundwater resource protection wells, permanent GeoProbe and geotechnical soil borings, and river substrate and aquifer porewater monitoring tubes.
c. Well names are assigned by the FHWA; however, the Manager, S&GRP, is responsible to ensure that the well name is affixed to each groundwater resource protection well, permanent GeoProbe and geotechnical soil boring, and river substrate and aquifer porewater monitoring tube.
d. The assigned well name shall be affixed to the groundwater resource protection well casing (or underground vault) and the protective post (if present) in one of two ways: (1) by stencil or (2) with a self-adhesive label.
e. For permanent GeoProbe or geotechnical soil borings, a self-adhesive label with the assigned well name shall be affixed immediately adjacent to the WIN.
f. The assigned well name for river substrate or aquifer porewater monitoring tubes shall be on a self-adhesive label affixed immediately adjacent to the WIN.
g. It is unlawful to remove or tamper with a well name except during well maintenance/alteration activities by a State of Washington licensed driller.
h. When a well is decommissioned, the well name shall be relocated in accordance with the decommissioning plan.

2.2.3 Equipment and Materials

Global Positioning System (GPS) equipment may be used to obtain coordinates (for planned groundwater resource protection wells, GeoProbe or geotechnical soil borings, and river substrate and aquifer porewater monitoring tubes) to support the WIN request.

3.0 DOCUMENT

3.1 Assigning the Well Identification Number

3.1.1 The POC will request a WIN for each well from the FHWA.
3.1.2 The FHWA will review the request and assign a WIN to each well.
3.1.3 The POC will notify the FHWA of any unused WINs within 30 days of project completion or cancellation. Unused WINs are not reassigned and are tracked in the HWIS database as "cancelled."
3.1.4 The FHWA will enter the WINs into the HWIS database.

3.2 Assigning the Hanford Site Well Name

Assignment of the Hanford Site well name will adhere to current practices for well naming (see Attachment 1) and shall be made by the FHWA. The well name shall be assigned immediately prior to the approval of the procurement package so that procurement documents contain both the WINs and well names for all wells to be drilled. Temporary GeoProbe and geotechnical soil borings do not require well names.

3.2.1 The POC will request a well name and provide the FHWA with the WIN identifier and the coordinates of the proposed well.

3.2.2 Well names will be assigned to each permanent groundwater resource protection well, Geoprobe, geotechnical soil boring, and each river substrate and aquifer porewater monitoring tube on the Hanford Site. Items not considered permanent shall utilize the WIN as the well Name.

3.2.3 The FHWA shall enter the well name into the HWIS database.

3.3 Affixing the Well Identification Number and Well Name

The POC shall be responsible for ensuring that the WIN and well name are affixed to each groundwater resource protection well, permanent GeoProbe and geotechnical soil boring and river substrate and aquifer porewater monitoring tube.

4.0 BIBLIOGRAPHY

4.1 Source References

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4.1.6 McGhan, V. L., P. J. Mitchell, and R. S. Argo, 1985, *Hanford Wells*, PNL-5397, UC-11, Pacific Northwest Laboratory, Richland, Washington

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4.2 Working References

4.2.1 WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended

5.0 ATTACHMENTS

5.1 Attachment 1 - Methodology for Establishing Groundwater Resource Protection Well, Permanent GeoProbe and Geotechnical Soil Boring, and River Substrate and Aquifer Porewater Monitoring Tube Names

1.0 INTRODUCTION

The groundwater resource protection well naming and numbering systems currently in use at the Hanford Site were developed over time as the Site expanded. Three systems are in use: one system for the 100 and 200 Areas, a second system for the 300 Area, and a third system for the 400, 600, 1100, and 3000 Areas. Each system uses three groups of alphabetic and/or numeric characters, separated by hyphens (e.g., 299-E23-46, 399-4-15, etc.)

Historically, the first group of numeric identifiers has identified the general geographic area and indicated the presence of a well or a permanent geotechnical soil boring. This revised attachment broadens the concept of a "well" to include several other special kinds of geotechnical facilities that are frequently constructed on the Hanford Site (e.g., GeoProbe and other push technologies), river substrate and aquifer porewater monitoring tubes, soil gas monitoring tubes, moisture probes, etc.). The work "well" is used hereinafter in this general sense. When referring to a saturated zone "well," the phrase "groundwater resource protection well" will be used.

All three of the systems use the same rules for the **first** of the three groups of characters. The systems differ from one another in how the second group of characters (further addresses the geographic location), and the third group of characters (addresses the sequential number of the facility) are developed and applied. Each of the three Hanford Site systems is discussed below, as well as the well naming and numbering system used for wells drilled off the Hanford Site.

2.0 FIRST GROUP OF CHARACTERS

In all three systems, the **first one (or two) numbers** within the **first group** of characters always defines the geographic area within which the well falls. This is accomplished by the use of the geographic designators listed below.

2.1 Geographic Designators

Designator	Location
1	100 Areas
2	200 Areas
3	300 Areas
4	400 Areas
6	600 Areas
11	1100 Areas
30	3000 Area

For example, X**2**XX-XXX-XXX translates for the **200 Area**, and **11**XX-XXX-XXX for the **1100 Area**. (Note that the "Xs" are used as place holders within each group and are not part of the well name or number.)

In all three systems, the last two numbers within the first group of characters always defines the specific type of well at that location (e.g., groundwater resource protection well, GeoProbe boring, and river substrate or monitoring tube). This is accomplished by the use of the type-of-well designators listed below.

2.2 Type of Well

Designator	Designator Type
9 or 99	Groundwater resource protection well or permanent geotechnical soil boring
7 or 77	Push technology (including GeoProbe), well point, or driven casing (groundwater monitoring)
6 or 66	Aquifer porewater monitoring tube
5 or 55	River substrate tube
4 or 44	Soil gas monitoring tube
3 or 33	Moisture probe
2 or 22	Reserved

For example, XX**99**-XXX-XXX translates for a **well** or permanent **geotechnical soil boring**, and XX**66**-XXX-XXX translates for an aquifer porewater monitoring tube.

3.0 AREA SPECIFIC NAME CONVENTIONS

3.1 100 and 200 Area Naming Conventions

3.1.1 First Group

The first group of characters for the 100 and 200 Areas, which define the geographical location and the specific type of well, is assigned according to the rules stated in Sections 2.1 and 2.2 of this attachment.

3.1.2 Second Group

The second group of characters for the 100 and 200 Areas further defines the geographic location of the well. This is accomplished by the use of the geographical location designators listed below.

3.1.3 Geographic Location Designator

E = 200 East Area
W = 200 West Area
B = 100 BC Area
D = 100 D Area
F = 100 F Area
H = 100 H Area

K = 100 K Area
N = 100 N Area

The first **letter** within the second group of characters identifies the **specific** area within which the well falls. For example, X**2**XX-**E**XX-XXX translates for the 200 East Area.

The last two characters within the second group of characters identifies the specific map sheet **number** (from the M-1600 or M-2600 series of maps) on which the facility falls. For example, X299-**E24**XXX translates to a groundwater resource protection well in the 200 **East** Area that is located on map sheet number 24. (Note that the 100K and 100N Areas do not have sheet designations; therefore, the second character group for wells in these areas would simply be **"K"** or **"N."**)

3.1.4 Third Group

The third group of characters for the 100 and 200 Areas refers to the *sequential number* of the *specific well within the defined geographic area*. For example, X299-E24-24 translates to groundwater resource protection well number 24 in the 200 East Area that is located on map sheet number 24. Similarly, X199-K-23 translates to well number 23 in the 100K Area.

Of special interest in the 200 Areas, many wells have been completed in the unsaturated, or vadose zone to evaluate contaminates. From at least 1958, these wells have been assigned well numbers greater than 50 but less than 1,000 (i.e., wells to the saturated zone had numbers less than 50 and greater than 1,000), to facilitate their identification. Many saturated zone monitoring wells in the 200 Areas have gone dry over the last several years, and many more will do so in the future, as the water mounding effect of the production years dissipates. It is not meaningful to maintain this convention due to the large number of saturated zone wells that are currently, and others that soon will be, monitoring the vadose zone.

3.2 300 Area Naming Conventions

3.2.1 First Group

The first group of characters for the 300 Area is assigned according to the rules stated in Sections 2.1 and 2.2 of this attachment.

3.2.2 Second Group

The second group of characters for the 300 Area wells consists of the M-3601 map series sheet number only. For example, X399-XX4-XXX translates to a 300 Area well located on map sheet 4.

3.2.3 Third Group

The third roup of characters for the 300 Area is a *sequential integer assigned to the well*. For example, X399-4-15 translates to groundwater resource protection well number 15 on map sheet 4 in the 300 Area.

3.3 400, 600, 1100, and 3000 Areas Naming Conventions

3.3.1 First Group

The first group of characters for the 400, 600, 1100, and 3000 Areas is assigned according to the rules stated in Sections 2.1 and 2.2 of this attachment.

3.3.2 Second and Third Groups

The second and third group of characters for the 400, 600, 1100, and 3000 Areas consist of the absolute value of the well's northing and westing in Hanford Plant coordinates, respectively, rounded to the nearest 1,000 feet. For example, a well located outside any area fence at coordinates N25995, W14995, would be named X699-26-15. If a facility is located south or east of the Hanford Plant coordinate origin, an "S" or "E" would be used with the number (e.g., X699-SXX-EXX or 699-26-E15).

3.4 Piezometer Well/Tube Naming Conventions

A host well containing more than one piezometer shall have names and numbers assigned in accordance with the above listed conventions. However, each piezometer within the well shall be further defined by the host well name plus the following possible suffixes added to the third group of characters: O, P, Q, R, S, T, or U. The accepted method for assigning the letter designation shall be "O" for the annulus, and "P" for the deepest piezometer. Piezometers progressively shallower than "P" shall be labeled "Q", "R", "S", "T", or "U", in that order. For example, X299-W11-XX2S translates to the fourth deepest piezometer (third one above P) in well number 2, on sheet number 11, in the 200 West Area.

3.5 Multiple Well Sites

3.5.1 100, 200, and 300 Areas

For multiple-wells (including river substrate and aquifer porewater monitoring tubes), in the 100, 200, and 300 Areas, if a well "cluster" occurs near the boundary of a map sheet (except 100N and 100K Areas), the wells shall be named for the map sheet on which they fall (second group), and be numbered sequentially in the third group. For example, if 23 wells exist on map sheet 24 in the 200E Area, and two of three new wells ("cluster" location) fall on map sheet 24, but the third falls on map sheet 31 (with 11 existing wells), the well names would be 299-E24-24, 299-E24-25, and 299-E31-12.

Because map sheets are not used in the 100N and 100K Areas, a three-well "cluster" site in the 100K Area might be named 199-K-23, 199-K-24, and 199-K-25; and in the 100N Area, 199-N-17, 199-N-18, and 199-N-19.

3.5.2 400, 600, 1100, and 3000 Areas

The well naming rules for wells in the 400, 600, 1100, and 3000 Areas can result in several identical well names (all three groups of characters) because of the rounding of the coordinates to the nearest 1,000 feet. To differentiate these multiple-wells, a suffix is added to the end of the third group of characters. The name assigned to the second well drilled at such a multiple-well site shall have a "B" at the end of the third grouping. For example, in the 600 Area, X699-X26-15B) translates to the second well drilled within the naming area defined by X699-X26-15. Subsequent sequential wells drilled at such a site would have suffixes of "C", "D", "E", etc. The first well is, by default, the "A" well, but need not be labeled as such. For example, if well 699-26-

15 was drilled in 1997, and a second well (“B”) was drilled within the same naming area in 2001, the original well should not be renamed with an “A” suffix.

3.6 Offsite Well Naming

Wells located **offsite and outside the boundaries of the Hanford Site areas** shall be names using a variation of the United States Geological Survey well naming convention (also used by Ecology). This system is based the **Township** and **Range** where the well is located. The first group is the township where the well is located. The second group is the Range where the well is located. The third group has three parts. The first one (or two) numbers identify the Section number where the well is located. The alphabetic character identifies the subdivision of the Section in which the well is located. The last one or two characters are a sequential number assigned to the well. For example, in offsite well **08N 30E 14M01**, the first two groups would translate to **Township 8 North and Range 30 East**. The last group would translate to well number **1**, in the 40 acre subdivision labeled **M**, in Section **14** (see below).

R 30 E

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

T 8 N Section 14

ATTACHMENT 8 – WATER LEVEL FORM

Water-Level Measurement

Well Name: 299-W22-44	Well ID: A4975	Project Name: S-SX Tank March	Measurement Date:

Measurement Point (MP) Description: Top of pump plate	Reference Point (RP) Description: Top of outer casing

Measuring Device Type: [ ] Steel Tape [ ] E-Tape [ ] Other (Specify) ________________	Measuring Device ID:

Previous Adjusted Depth to Water: 70.979 m

Times are recorded as: [X] Pacific Standard Time (PST) [ ] Pacific Daylight Time (PDT)

Dry Measurement: _______ Yes					Optional	
Time of Measurement	Depth to Water from MP	Depth of Water Units	MP-RP	MP-RP Units	Adjusted Depth to Water*	Adjusted Depth to Water Units
		m	0.004	m		m
		m	0.004	m		m
		m	0.004	m		m

*Adjusted Depth to Water = Depth to Water from MP - (MP-PR)

Preprinted MP-RP value verified? [ ] Yes [ ] No

Was the portion of the measuring device(s) which came into contact with the well water plus approximately 3 feet decontaminated (cleaned) using a clean towel and potable water? [ ] Yes [ ] No

Access Requirements and Other Information:
HPT COVERAGE NOT REQUIRED
In surface zone. HPT Coverage required for this well. SCA, underground rad.

Comments:

Measured by: (Print Name, Signature, and Date)

Reviewed by: (Print Name, Signature, and Date)

CHPRC BOTTLE PRESERVATION CHAIN OF CUSTODY			1. _____
2. Custody Form Initiator:		3. Telephone:	
4. Project Designation/Sampling Locations:			
5. CHARGE CODE:		**6. TIME SPENT:**	**HOURS**
7. Preservation Date/Time:			
8. Bottle type/size	**9. Preservative used**	**10. Volume added (ml)**	**11. Bottle Lot No.**

CHAIN OF POSSESSION (Sign and Print Names)

12. Relinquished By	13. Date	14. Time	15. Received By	16. Date	17. Time

Comments:

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